CONSUMER ADOPTION OF MOBILE PAYMENT SYSTEMS IN MALAWI:

CASE OF ZAP FOR AIRTEL MALAWI

MSc. (INFORMATICS) THESIS

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UNIVERSITY OF MALAWI

CHANCELLOR COLLEGE

MAY, 2012

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MSc. (Informatics) Thesis

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Thesis submitted to the Department of Mathematical Sciences, Faculty of Science, in partial fulfilment of the requirements for the degree of Master of Science (Informatics)

UNIVERSITY OF MALAWI

CHANCELLOR COLLEGE

MAY 2012

DECLARATION

I the undersigned hereby declare that this thesis is my own original work which has not been submitted to any other institution for similar purposes. Where other people's work has been used acknowledgements have been made.

_____

Full Legal Name

_____

Signature

_____

Date

CERTIFICATE OF APPROVAL/CERTIFICATION

The undersigned certify that this thesis represents the student's own work and effort and has been submitted with our approval.

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Main Supervisor

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DEDICATION

First to God, for all things are possible!!

This work of hand, pen and brain is also dedicated to the triple **J** family; **J**oyce (my lovely wife), **J**oshua (first born son) and **J**oel (second born son). To **Mo**, I say thanks for your hand. Lastly, to mum and dad – you showed me the way.

ACKNOWLEDGEMENTS

The enormous effort and precious time that various people have put into this research work cannot go without a heart-felt appreciation.

Firstly, my gratitude goes to the main supervisor Dr. H.S Gombachika (The Malawi Polytechnic, University of Malawi) and to the co-supervisor Associate Professor Jo Herstad (University of Oslo, Norway). Without you this research work would have been a farfetched dream forever. But you made it a reality!! Your thoughtful guidance showed me the way to investigative and systematic approach to thesis writing.

Secondly, let me acknowledge the following for their wonderful contributions towards this research work: Mr. P. Chikumba (The Malawi Polytechnic, University of Malawi) and Mr. Tiwonge Manda (Chancellor College, University of Malawi). You lit a light for my footsteps. You were indeed an inspiration to me.

Last but not least, I would like to appreciate my lovely wife, Joyce for being there when the tough was getting going. You cheered up the two Jo's when I was not there.

Finally, my appreciation goes to all those who wished me well for this Masters Degree journey – It has been a wonderful journey. Be blessed.

ABSTRACT

Mobile payment system enables consumers to purchase goods and services as well as transfer money using a mobile phone. This qualitative study aimed at investigating the factors that are affecting consumers in using mobile payment systems in Malawi.

People who have used a mobile payment system called Zap were interviewed. Snowball sampling technique was used to identify the study participants in Blantyre District. Inductive and deductive qualitative data analyses were carried out based on the transcriptions of the interviews.

Study findings show that relative advantage, complexity, compatibility, cost, trust and security, network externalities and situational factors affect use of mobile payment systems. In addition, personal characteristics and use of mass media play a role in the adoption of mobile payment systems. The findings reinforce the existing theory of Diffusion of Innovation and adoption of mobile payment systems.

The study recommends improvement in the network stability, extension of the service to banks and utility service providers, and recruitment of more mobile payment agents across the country.

Keywords: Adoption, Innovation, Mobile Payments, Mobile Phone, Zap

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LIST OF ABBREVIATIONS AND ACCRONYMS

ATM	Auto Teller Machine
DSTv	Digital Satellite Television
EFTPOS	Electronic Funds Transfer at Point Of Sale
FMB	First Merchant Bank
IDT	Innovation Diffusion Theory
MACRA	Malawi Communications Regulatory Authority
MMS	Multimedia Message Service
MNO	Mobile Network Operator
NBM	National Bank of Malawi
OIBM	Opportunity International Bank of Malawi
PDA	Personal Digital Assistant
POS	Point Of Sale
SMS	Short Message Service
TAM	Technology Acceptance Model
TNM	Telecom Networks Malawi
USD	United States of America Dollar
USSD	Unstructured Supplementary Service Data
UTAUT	Universal Technology Acceptance and Use Theory

CHAPTER 1: INTRODUCTION

1.1 Introduction

This chapter provides details on the following areas: background of mobile payments and their use in various countries, research problem that looks at adoption of mobile payments, research objectives, research motivation and the structure of this thesis.

1.2 Background

Making payments for goods and services is an everyday activity for most households worldwide. Payment is the transfer of value via a financial asset from one person to another, usually in return for some good or service received in a transaction (Gans & Scheelings, 1999). However, sometimes the recipient of the money neither sells goods nor provides a service to the sender of the money. This is referred to as money transfer. The research focused on payments as well as money transfers that are carried out using a mobile device.

According to Au and Kauffman (2007) any payment where a mobile device is used to initiate, authorize and confirm an exchange of financial value in return for goods and services is referred to as mobile payment. Mobile devices may include mobile phones, Personal Digital Assistants

(PDAs), wireless tablets and any other device that connect to mobile telecommunication network and make it possible for payments to be made (Karnouskos & Fokus, 2004) . In so doing, mobile phones bring together services that cross existing boundaries. For instance, by allowing airtime to be used as currency, they provide an overlap between telecommunications and finance (Heeks & Jagun, 2007).

In Europe and North America with few exceptions such as Austria, Spain and Scandinavian countries the developments of mobile payments have not been successful. However, mobile payment services in Asia have been fairly successful especially in South Korea, Japan and other Asian countries e.g., Mobile Suica, Edy, Moneta, Octopus, GCash (Carr, 2007). In Philippines, the uptake of mobile payment systems has been particularly strong, where three million customers use systems offered by mobile operators Smart and Globe (Donner & Tellez, 2008). The main difference between successful implementations of mobile payment services in the Asia Pacific region and failure in Europe and North America is primarily attributed to the 'payment culture' of the consumers that are country-specific (Carr, 2007). In agreement, consumers from different cultures may differ considerably in perceptions, beliefs, selection, and use of m-commerce (Hofstede, 1984; Kim, Lee & Lee, 2002).

M-PESA ('M' for Mobile and 'PESA' is a Swahili language word which means 'money') in Kenya has been one of the most successful mobile money services in Africa with approximately 7 million users and 10,000 agents across the country as of 2009 (Camner, Pulver & Sjoblom, 2009). M-PESA was also introduced in Tanzania in 2008 by Vodacom, a Mobile Network Operator (MNO) and by June 2009 the service had attracted about 280,000 users and 1,000 agents *(ibid).* Khanje (2010) and Mashni (2010) indicate that Zain Africa (now being called Airtel Africa) introduced a mobile payment service called "Zap" in Kenya, Uganda, Tanzania, Siera Leone and Niger. In the three East African countries, namely: Kenya, Tanzania and Uganda, Zap was launched in February 2009(Khanje, 2010; Mashni, 2010). Notably, Zap was introduced in countries where M-PESA was already successfully implemented, namely Kenya and Tanzania.

According to International Telecommunications Union (ITU, 2011), there were 2.43 million mobile cellular subscribers in Malawi as of 2009 for the two mobile operators, namely Telekom Networks Malawi (TNM) and Zain Malawi. Zain Malawi was formerly known as Celtel Malawi Limited. Celtel Malawi Limited was launched in October 1999 as the country's second mobile network provider after TNM which was launched in 1995 (Wandawanda, 2005). Zain Malawi changed to Airtel Malawi from 23rd September, 2010. Airtel Malawi will be used throughout this thesis.

Airtel Malawi and TNM offer their customers downloadable materials for purchase using their phones. These downloads include rings tones, caller tunes and music. Airtel Malawi and TNM customers can also purchase mobile phone units using "Zachangu" (local language which literally means 'quick') service offered by agents. This is another form of mobile payment, an alternative way of purchasing prepaid airtime instead of buying scratch cards which have hidden codes or using an auto teller machine. Airtel Malawi was the first mobile company to introduce phone-to-phone airtime credit transfer service in 2005 (Zain, 2011) which is dubbed "Me2U" (short word for 'me to you'). TNM also offers this service to its customers.

Airtel Malawi introduced Zap mobile payment service in January 2010 in Malawi as a full commercial pilot (Zain, 2010; Khanje, 2010). Zap will enable customers to withdraw cash or pay for goods and services, school fees and utility bills, including electricity and water; receive money from or send money to friends and family; send and receive money to their bank accounts; top-up their or someone else's airtime and manage their bank accounts (Khanje 2010; Mashni 2010; Zain, 2011).

> *"Zap 'khusa mmanja' (local language which literally means 'money in your hands') allows Zain customers to load money, withdraw and use it for payment of various services... so far 20 000 people have registered for the services"* (Zain Marketing Director, 2010).

Multi-choice Malawi on Thursday the 27th of April 2010 became the first service provider whose clients, the Digital Satellite Television (DStv) subscribers can now pay their subscription using the Zap Khusa Mmanja mobile payment (Munthali, 2010).

Several banks in Malawi, namely: Inde Bank, First Merchant Bank(FMB), National Bank of Malawi (NBM) and Opportunity International Bank of Malawi (OIBM) have mobile banking services (FMB, 2010; IndeBank, 2010; NBM, 2010; SEEP, 2009).

There seems to be an overlap between mobile banking and mobile payments in the sense that within mobile banking there are payment transactions. However, according to SEEP (2009), the main difference is that mobile banking uses a 'bank-led' model while mobile payment usually uses a 'telco-led' model. Telco-led model means that it is the telecommunication company that runs the payment services while in "bank-led" model, it is the bank that offers the banking services in partnership with a telecommunication company. In addition, in a telco-led model, regulations bar the telecommunication company from offering savings or loan products, so their programs typically focus on helping people to move money quickly and securely (*ibid*) unlike the bank-led model where the money is subjected to bank interest calculations. From these two approaches on how mobile payment service is implemented,

this research focused on mobile payment services run by mobile network operators.

1.3 Research Problem

Considering the significant time and money required for the development of mobile payment systems, it is of paramount importance to ensure that mobile users will actually use mobile payment (Kim, Mirusmonov & Lee, 2010). Similarly, survey by Dunn and Company (2007) suggests that companies in the mobile payment business perceive consumer acceptance as the greatest barrier to mobile payments. It is clear that consumer adoption is one of the key issues that need attention for the success of mobile payments. Therefore, there is no doubt that understanding the factors of consumer adoption remains important to aid in designing a solution that fulfills consumers' needs (Ondrus & Pigneur, 2006). In particular, the mobile user's intention to use mobile payment is of considerable interest to researchers and practitioners, because financial institutions, trusted third parties, payment service providers, and systems, software and supporting service providers can benefit greatly from enhanced understanding of the key factors underlying mobile users' intention (Dahlberg,Mallat & Oorni, 2003; Ondrus & Pigneur, 2006; Lim, 2008).

Mobile payments are new in Malawi hence little research has been conducted on mobile payments. The research done by Saidi (2009) focused on the opportunities and challenges of implementing mobile commerce in Malawi. On the other hand, Wandawanda (2005) concentrated on the general demand for new and better services in the form of mobile commerce solutions by banks, business owners and younger people prior to the implementation of mobile payment systems. Previous research (Saidi, 2009; Wandawanda, 2005) did not focus much on the consumer adoption of mobile payments, most especially after the implementation of the telco-led model mobile payment system in Malawi. This research was attempting to fill in a gap of knowledge and understanding of consumer adoption after the implementation of the mobile payment system in Malawi.

Different countries have notable differences of mobile payment and services and the research findings may therefore vary from one country to another (Mallat, 2007). It was therefore found necessary to investigate on the factors that would affect the consumer in adopting mobile payment systems considering the availability of other payment methods in Malawi.

1.4 Research Question and Objectives

Mobile payment is an alternative way of making payments for goods and services as well as an alternative means of money transfer among people who are not carrying out business transactions. The question that this research intended to answer was:

What factors are affecting consumers in adopting mobile payment systems in Malawi?

The following objectives were identified to address the above research question.

- To identify existing methods of making payments and money transfer in Malawi.
- To investigate how mobile payments are being utilized by consumers in Malawi.
- To assess the factors affecting the consumers of mobile payments in Malawi.

1.5 Research Motivation

With the omnipresent availability of mobile phones (and other mobile devices), m-commerce services have a promising future (Schwiderski-Grosche & Knospe, 2002). One promising area of mobile commerce (m-commerce) that is receiving growing attention globally is mobile payment (Chen, 2008). The potential of mobile technology is also based on the ubiquitous of mobile devices that make a mobile subscriber use a phone anywhere and anytime, although "everywhere" characteristic is

dependent on the availability of mobile network. Furthermore, the decrease in price of the mobile devices due to market competitiveness and the established open standard for Wireless application development is fueling this hyper growth of m-commerce (Shih & Shim, 2002).

1.6 Thesis Structure

This thesis contains six chapters. Chapter 1 provides an introduction to the thesis. The introduction includes: background, research problem, research question and objectives, and the research motivation. Chapter 2 presents the context in which the research was conducted. Literature review is covered in chapter 3. The literature focuses on mobile payments, money transfers and theories on adoption of technology. This chapter is followed by chapter 4 which gives details on research methodology. It looks at how the research was designed and carried out in order to meet the set objectives. Chapter 5 presents the findings of the research on the data which was collected from the field. Theories in literature review of chapter 3 are discussed in relation to the research findings of chapter 5 in chapter 6. Finally, the thesis concludes by reflecting on the research questions and how they have been answered. The conclusion also gives pointers to further research work emanating from this research.

CHAPTER 2: RESEARCH SETTING

2.1 Introduction

This chapter presents the context in which the research was carried out. The contents include: brief geography of Malawi, population of people, economic status, telecommunication industry, banking services and postal services in Malawi especially in Blantyre.

2.2 Brief Geography of Malawi

The research was conducted in Blantyre District in Malawi. Malawi is landlocked country located in the southern part of the African continent bordered by three countries namely: Mozambique, Zambia and Tanzania as shown in figure 2.1. The total area covered by the country is 118,480 square kilometers of which water covers 24,400 square kilometers. The country is administratively divided into 28 districts which are located in the three regions, namely: Northern Region, Central Region and Southern Region. Northern Region has 6 districts; Central Region has 9 districts and Southern Region has 13 districts.

2.3 Population in Malawi and Blantyre District

According to National Statistical Office (2009), the estimated population for Malawi in 2008 was 13,102,076 and the projected population for the year 2011 was 14,388,550. The population is predominantly rural with 84.7 percent of the population residing in rural areas, and 15.3 percent residing in urban areas (NSO, 2009). The population density of Malawi as at 2008 was at 139, which was much higher than of neighbouring countries. Tanzania, Mozambique, Zimbabwe and Zambia had population densities of 43, 25.4, 34 and 16 persons per square kilometer respectively (*ibid*).

Blantyre is one of the four main commercial cities in Malawi. It is divided into urban and rural with a population of 661,444 and 340,728 respectively (NSO, 2009). The urban has a population density of 3,006 persons per square kilometer compared to 190 for the rural areas.

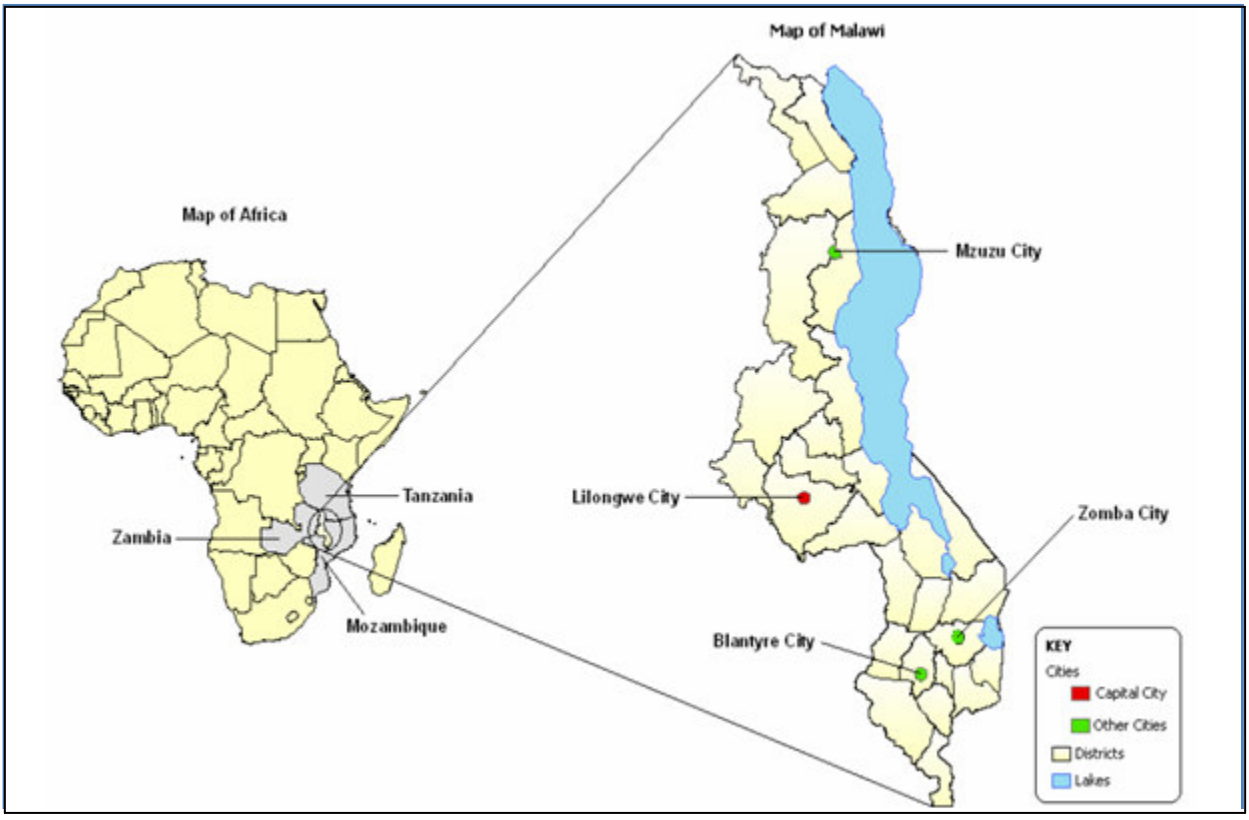


Figure 2.1: Map of Africa and Map of Malawi showing Cities and Districts

(Source: Msiska, 2009)

2.4 Economic Status in Malawi

The economy of Malawi is predominantly agricultural. Agriculture accounts for more than one-third of Gross Domestic Product (GDP) and 90% of export revenues (Central-Intelligence-Agency, 2011). Malawi is among the least developed countries in the world with a GDP per capita of $900 as of 2006 (World-Bank, 2011). According to World Bank (2011), 52.4% of the population were living below the national poverty line as of

2005. This is slightly more than half of the entire population of Malawi. The economy depends on substantial inflows of economic assistance from the International Monetary Fund (IMF), the World Bank, and individual donor nations (Central-Intelligence-Agency, 2011).

2.5 Telecommunication Industry in Malawi

In Malawi, telecommunication services are regulated by Malawi Communications Regulatory Authority (MACRA) which was established in 1998. Currently, there are two mobile network operators in Malawi, namely TNM and Airtel Malawi. A third mobile operator would have been G-Mobile which was given license on 20th March 2009 to start operating on 20th January 2010 (MACRA, 2009). But due to delays the license was revoked by MACRA on 20th September, 2010.

The network coverage for the two mobile network operators in Malawi, namely: Airtel Malawi and TNM are given in figure 2.2 and figure 2.3 respectively. It shows that network coverage for Airtel Malawi covers more areas and has good coverage quality compared to that of TNM. However, the actual percentage of network coverage in respect to land area of Malawi was not established.

Apart from the mobile network operators, there are two fixed-line network operators, namely; Malawi Telecommunications Limited (MTL) and Access Communications Limited (ACL). MTL started operating in

May 2000 and ACL was given a license in September 2008 but started its operations in January 2010.

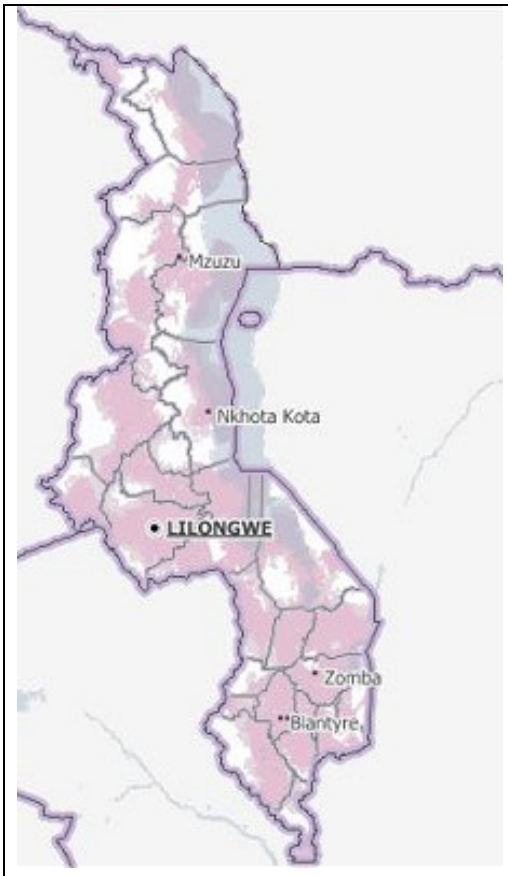


Figure 2.2: Airtel Malawi GSM Network Coverage Map

(Source: GSM, 2011a)

Figure 2.3: TNM GSM Network Coverage Map

(Source : GSM, 2011b)

Key

GSM 900 Coverage Quality (high/variable)

There were approximately 2.4 million mobile phone subscribers in Malawi as of 2009 (ITU, 2011). According to International Telecommunications Union (2011), mobile phone subscriptions in Malawi have been increasing exponentially from 2000 to 2009 as depicted in the graph in figure 2.4.

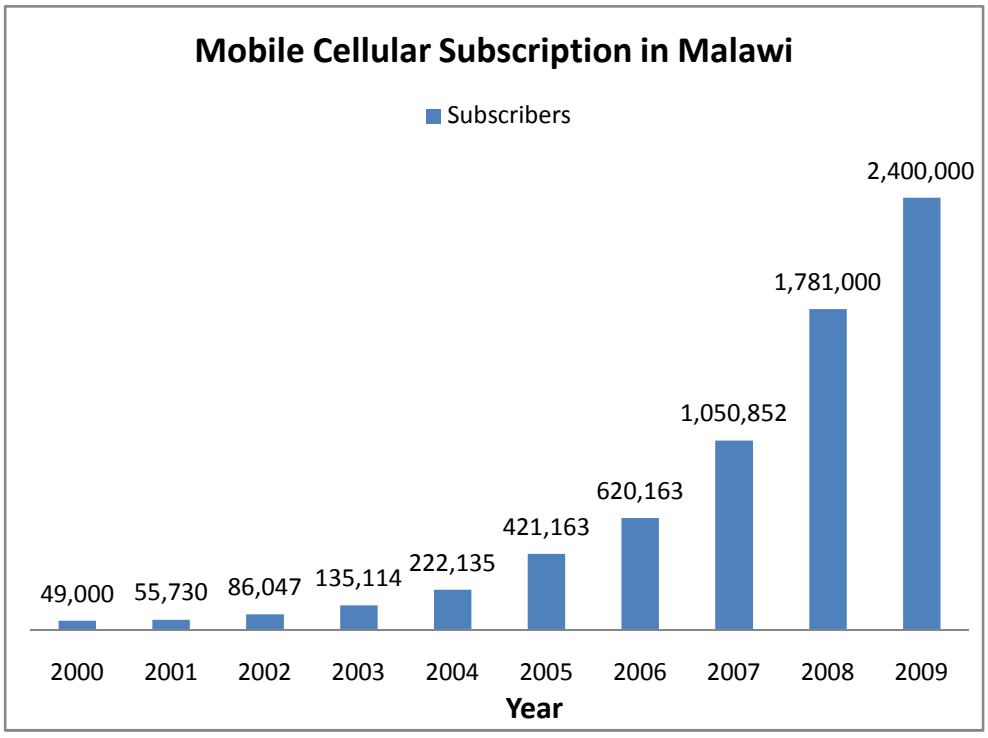


Figure 2.4: Mobile phone subscriptions between 2000 and 2009 in Malawi (Source: ITU, 2011)

The mobile network operators provide a number of services to their customers. These include voice calls, SMS, Internet, Me2U and

Zachangu. Airtel Malawi introduced mobile payment service called Zap in January 2010.

The charge for calling also depends on the time of the day. Voice calls are expensive during the peak period and cheaper during the off-peak period.

The standard charges for voice calls are shown in figure 2.5.

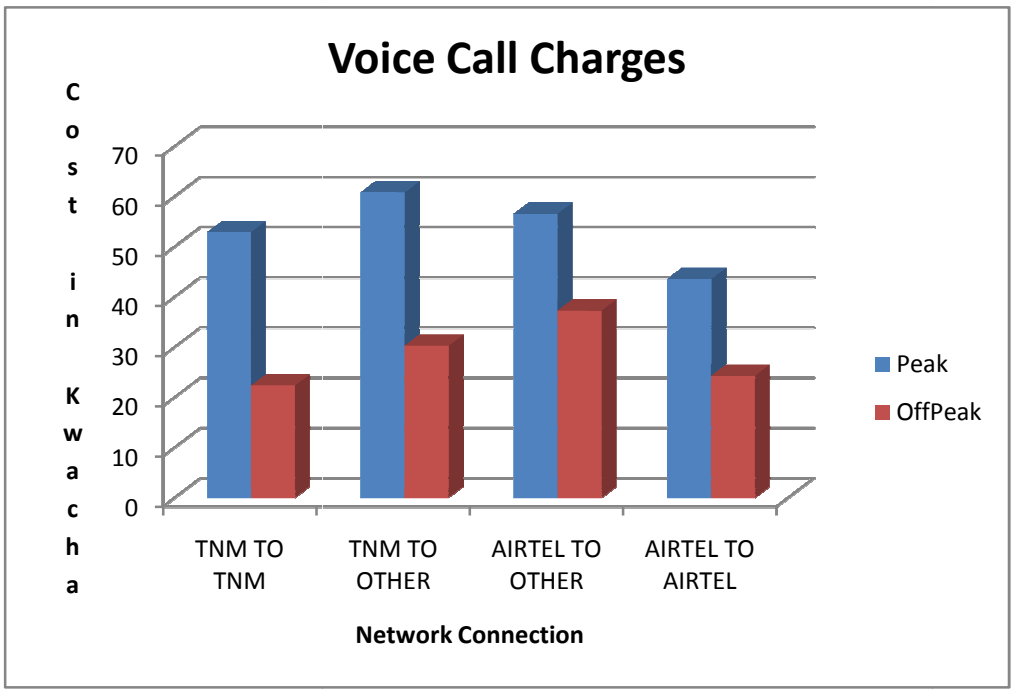


Figure 2.5: Charges for local Voice calls for Mobile Network Operators

2.6 Banking Industry in Malawi

Since the research is on payments and money transfers, banks play a role in one way or the other. Some of financial services that banks provide are similar to mobile payment services; for instance money

transfers and bill payments. This section presents a brief on the current status of banking services that are related to mobile payment services offered by mobile network operators.

Currently, there are 10 commercial banks whose operations are regulated by the Reserve Bank of Malawi which is the central bank. The commercial banks are: Malawi Savings Bank (MSB), First Merchant Bank (FMB), First Discount House (FDH) Bank, National Bank of Malawi (NBM), Standard Bank, Eco Bank, International Commercial Bank, Inde Bank, Opportunity International Bank of Malawi (OIMB) and New Building Society (NBS) Bank.

Most banks are open to customers from Monday to Friday every week from 8:00am to 3:00pm and from 9:00am to 11:00am on Saturdays. Usually banks are closed during public holidays.

According to and SEEP (2009), 19.1% of adult population in Malawi is unbanked, representing approximately 1.15 million people. The level of indirect access to banking is high in Malawi – 22% of the banked adults make use of bank accounts that are not registered in their names (FinScope, 2009).

Currently, there are three banks which are offering mobile phone banking services. These include: NBM, FMB and IOBM. NBM launched

Mo626, an SMS mobile phone banking in 2008. 'Mo' stands for mobile, and 6 for 'N', 2 for 'B' and 6 for 'M' on the mobile phone keypad. FMB offers a Unstructured Supplementary Service Data (USSD) based mobile banking solution since 2010. IOBM introduced a cell phone banking facility dubbed "Banki M'manja" (local language which literally means 'a bank in your hands') which also uses USSD technology to its customers on 7th May, 2010 (Mgwadira, 2010). The common services available for each of the above mentioned mobile phone banking are: balance enquiry, funds transfer, Personal Identification Number (PIN) change, mini statement, bill payments (e.g. water, electricity), mobile top up for your phone, mobile top up for another person's phone, stop payment, transaction alerts on amounts above set limits and cheque book request (NBM, 2010). FMB customers who are registered to use mobile phone banking are able to remit money to any person as long as they have a mobile phone. The recipient collects cash from any FMB auto teller machine.

2.7 Money Transfer Services in Malawi

Money transfers in Malawi were previously being handled by Malawi Post office only through money orders. People would send each other money from one post office to another post office using money orders. The service has evolved over the years and now there are three service

providers of money transfers. The service providers are Western Union, Money Gram, and Fast cash. Most of these money transfers are found in post offices which are available in both urban and rural areas all over Malawi. There are also available in some banks.

Common to the money transfer services, the sender fills a form when sending the money and then is asked to provide a secret question with its answer on the form (refer Appendix B). The sender has to send the secret details to the recipient. To collect the money, the recipient has to fill a form for receiving money which includes the secret question and the answer. In addition, the recipient must produce a valid identification document to get the money.

2.8 Chapter Summary

This chapter presented an overview of the research setting which included: the geography of Malawi, economic status of Malawi, telecommunication industry, banking industry and money transfer services. Telecommunication industry provides the infrastructure through which mobile payments are carried out and the banking industry offers alternative means of making payments as well as money transfer. The study was conducted in Blantyre, which is one of the commercial cities in Malawi.

CHAPTER 3: LITERATURE REVIEW

3.1 Introduction

This chapter looks at literature pertaining to means of making payments and transferring money; usage of mobile payment systems and different theories for technology acceptance. Categories of innovation adopters, characteristics of an innovation that persuades consumers to adopt an innovation and some specific factors of mobile payments adoptions are presented in this chapter.

3.2 Means of Making Payments

There are different ways in which consumers make payments for goods and services in their day to day living. Among the numerous methods of making payment are cash, credit card, Electronic Funds Transfer at Point Of Sale (EFTPOS) debit, cheque and direct debit (Gans & Scheelings, 1999). In addition, technological development has allowed more efficient and secure payment systems through the Internet, sometimes known as e-payments using e-money (Lim, 2008). Electronic payments technologies include magnetic stripe card, smartcard, contactless card and mobile handset.

Preference of payment instruments varies from country to country. Jonker (2007) found that people in Netherlands mostly use cash in comparison with debit cards, e-pulse and credit cards in a quantitative study that involved 2,000 households. In the United States of America (USA), Stavins (2001) noted that retail payments transactions made with electronic payment instruments still constitute only a small fraction of all payments. A recent study by Humphrey (2010) indicates that the United States of America (USA) has historically relied on cheques, Europe had a well-established nationwide electronic payment system before the USA, and Japan currently uses cash more than twice as much as Europe and over six times as much as the USA. Stavins (2001) argues that, in USA, differences in cost among payment instruments typically are not evident to consumers, who are charged the same amount regardless of how they pay.

According to Au & Kauffman (2007) any payment where a mobile device is used to initiate, authorize and confirm an exchange of financial value in return for goods and services is referred to as a mobile payment. The next section looks at what mobile payments are and what they are being used for across the world.

3.3 Mobile Payments

The European Central Bank (2004) defined mobile payments as a sub-group of e-payments, where mobile phones or other wireless communication devices are used to access accounts for payment services. Similarly, Kadhiwal and Zulfiquar (2007) defined mobile payment as any payment transaction which involves a mobile device. The mobile device of interest in this study is a mobile phone. Mobile payments are typically made remotely via premium rate SMS, WAP billing, Mobile Web, Direct-to-subscribers' bill and direct to credit cards (Kim et al., 2010).

Different countries have had different experiences regarding mobile payments. In March 2007, Kenya's largest mobile network operator, Safaricom (part of the Vodafone Group) launched M-PESA, an innovative payment service for the unbanked (Hughes & Lonie, 2011). "Pesa" is the Swahili word for cash; the "M" is for the mobile. A study by Camner and others (2009) shows that in Kenya, before introduction of M-PESA, people in the urban areas sent money to rural areas using the following ways: by hand sent with a family or friend; through bus companies; post office money order; directly into bank account; money transfer service; cheque; or paid into someone else account, who passed it on. Among these alternatives, most people preferred sending the money with friends

or family members. Use of courier companies and post office money orders was also popular. However, there was a massive reduction in the use of delivery by hand, post office orders and courier companies, following the introduction of M-PESA which people now prefer most (Camner et al., 2009). Furthermore, Kenyan farmers, who insure their crops against drought or other weather problems to Union Insurance and Provincial Insurance (UAP), receive their insurance claims via M-PESA (Must & Ludewig, 2010). A mobile payment model similar to M-PESA was introduced in Tanzania but has not been as successful as it has been in Kenya (Camner et al., 2009). In South Africa, WIZZIT a mobile banking service, allows a bank holder to move money from one bank account to another using a mobile phone that is linked to the bank account.

Mallat (2007) identified the following current and potential mobile payment applications for Finland: vending, ticketing, purchase of mobile content services, peer to peer fund transfers, payments on the Internet, and payments of goods and services in shops, restaurants and corner stores. In the qualitative study, Mallat (2007) used six focus groups with a total of 34 participants to solicit data in the investigation of factors influencing adoption of mobile payments. In Finland, Helsinki City Transport offers a mobile subway and tram ticket—an example of a successful mobile payment service (Mallat, Rossi & Tuunainen, 2004). In addition, mobile devices can be utilized in a variety of payments, such as

payments for digital content (e.g. ring tones, logos, news, music, or games), concert or flight tickets, parking fees, and bus, tram, train and taxi fares (Kim, Mirusmonov & Lee, 2010). In this case, the goods are received electronically on the mobile device or the service is offered remotely after making payment.

Adoption of technology has been studied and different theories have been formulated. A mobile payment system is a new technology and an alternative method of making payments and money transfers. As such its adoption by individuals is affected by various factors. Below is a discussion on the technology acceptance theories which seem relevant to mobile payment system.

3.4 Constructs of Technology Adoption Theories

Rogers (1995) defined an innovation as an idea, a practice or objective perceived as new by an individual, a group, or organization. In this study, the innovation is the mobile payment system. There are several factors that would influence the mobile phone user to start using technology and continue doing so. Different researchers have proposed different models for technology acceptance. Davis (1989) suggested a technology acceptance model (TAM). TAM is one of the first and most influential research models to explain user's IT adoption behavior (Davis, Bagozzi & Warshaw, 1989). It is based on two main variables namely;

perceived usefulness and perceived ease of use. Venkatesh and Davis (2000) extended TAM model to include social and organizational variables such as subjective norm, image, job relevance, output quality and result demonstrability (Kim et al., 2010). TAM does not fit well as argued by (Mallat, 2007) that it was developed to predict end-user acceptance of information systems within organizations while mobile phone users are not necessarily organizational users. In addition, Shin (2009) argued that TAM tends to assume that there is only single technology available to users while in this case users have other alternatives of mobile payment such as VISA cards on Point of Sale (POS).

Another model on technology acceptance is Universal Technology Acceptance and Use Theory (UTAUT) developed by Venkatesh, Morris, Davis and Davis (2003). UTAUT has four key constructs namely: performance expectancy, effort expectancy, social influence and facilitating conditions (Kim et al., 2010). Shin (2009) modified the original UTAUT model by Venkatesh and others (2003) to have six constructs which are perceived usefulness, perceived ease of use, social influence, self-efficacy, security and trust, and attitude toward using technology.

Innovation Diffusion Theory (IDT) by Rogers (1995) has been widely used in research involving adoption of information systems. For example adoption of spreadsheets by Brancheau and Wetherbe (1990), adoption

of operating systems by Straub, Karahann and Chervany (1999), adoption of mobile payments by Mallat (2007), and adoption of mobile Internet by Hsu, Lu and Hsu (2007). The original IDT determines five innovation characteristics that affect adoption: relative advantage, complexity, compatibility, triability, and observability as shown in figure 3.1. Mallat (2007) excluded triability and observability because they seemed not to be relevant to mobile payments but rather included security and trust, situational factors (Lee, Kim & Kim, 2005) and constructs of network externalities (Economides, 1996). Dahlberg, Mallat, Ondrus and Zmijewska (2008) carried a literature review on mobile payment researches and listed a number of consumer adoption factors for mobile payment services. Some of the factors are: ease to use, trust, security, usefulness, cost, social influence and compatibility. Many researchers used these constructs to study consumer adoption in mobile payments which suggests that they are indeed relevant and applicable. This study adopts the seven constructs used by Mallat (2007). These include: relative advantage, complexity, compatibility, cost, trust and security, network externalities and situational factors.

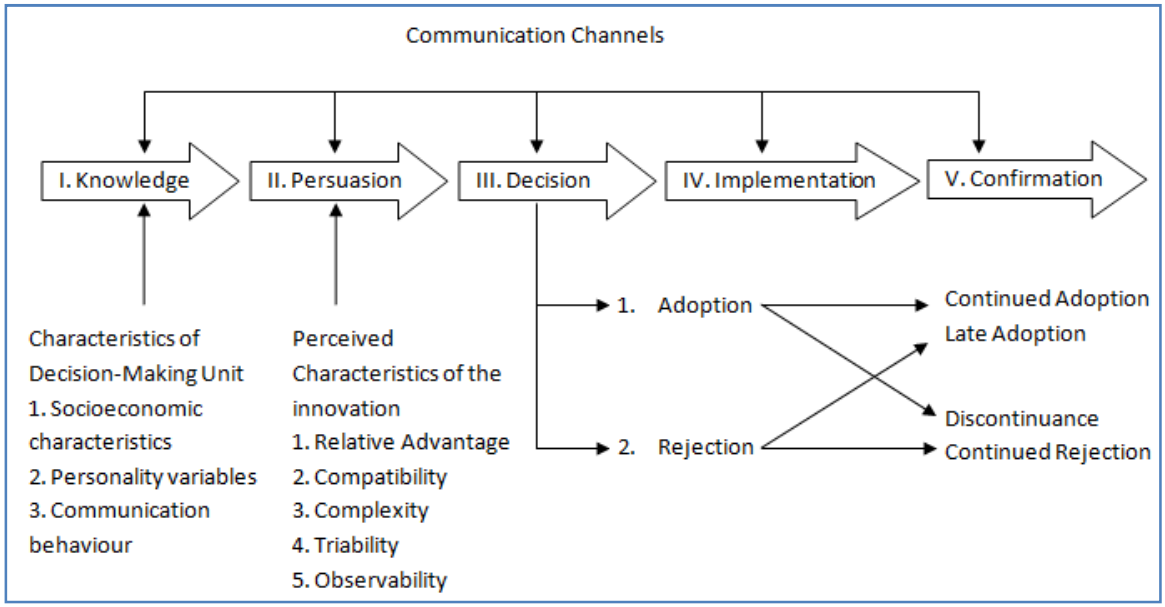


Figure 3.1: Diffusion of Innovation Theory

(Source: Rogers, 2003)

3.4.1 Relative Advantage

Mobile payment is one of the alternatives of various payment methods. For a consumer to opt the use of mobile device for payment transaction, relative advantage of mobile payment method does play a role. Hsu and others (2007) define relative advantage as the degree to which an innovation is perceived as better than the idea it supersedes. In other words, the innovation should present more advantages over the other means of achieving the same task. In this case, mobile payments need to have more benefits than other payment methods such as cash, credit cards and ATMs. In mobile commerce and payments context, previous

studies suggest that one of the key attributes impacting relative advantage of mobile technologies and services is their independence of time and location (Jarvenpaa & Lang, 2005; Carlsson, Walden & Bouwman,2006). In agreement to this, Au and Kauffman (2007) labeled the benefits provided by mobile technologies as "anytime and anywhere computing". A consumer may waste time to travel to a shop or an ATM to purchase goods or services when using cash, credit card or ATMs. Comparatively, Kim and others (2010) conclude that a combination of time and place which are the principal characteristics of m-payment is nothing but convenience. Findings by Mallat (2007) suggest that the relative advantage of mobile payments is related to the specific benefits provided by the new mobile technology: time-place independent payments, remote and ubiquitous access to payment services, and the possibility to avoid queuing and to complement cash payments. In conclusion, (*ibid*) found that relative advantage positively influences the adoption of mobile payments. The greater the perceived relative advantage of an innovation, the more rapid its rate of adoption (Lee, 2004) and the opposite should be true.

3.4.2 Complexity

Complexity is defined as the degree to which an innovation is perceived as difficult to understand and use (Rogers, 1995). In other words, a more

complex innovation would be taken as difficult to understand and use while a less complex innovation would be taken as ease to understand and use. In the context of mobile payments, complexity would be looked at as both the physical and mental effort required for a consumer to complete a transaction using a mobile device. Complexity and problems with usability have contributed to the low adoption of a variety of payments systems, including smart cards and mobile banking (Laukkanen & Lauronen, 2005). Complexity in mobile payments would be related to how the steps in carrying out a payment transaction are structured and usability is how the mobile device is designed for use. Important aspects related to mobile payment services ease of use include, for example, clear symbols and function keys, few and simple payment process steps, graphic display, and help functions (Pagani & Schipani, 2003).

Limitations in mobile devices features diminish the usability of mobile technologies (Siau,Sheng, Nah & Davis, 2004). Mallat (2007) cited small keypads, limited transmission speeds and memory and short battery life as some of the typical limitations for mobile technologies. Kim and others (2010) stated that m-payments must be both easy to learn and easy to use to prevent underutilization of these mobile payment systems. Findings of the researches done by Davis and others (1989) and Moore and Benbasat (1991) agree that the ease of use is significant in

predicting the intention to use information technology. To the contrary, ease of use had no significant effect on Multimedia Message Service (MMS) adoption (Hsu et al., 2007) and mobile commerce adoption (Wu & Wang, 2005).

3.4.3 Compatibility

Compatibility is the degree to which an innovation is perceived as consistent with individual existing values, beliefs, past experiences and needs (Lee, 2004). In the context of mobile payments, does the consumer need to know how to use a mobile device for instance a mobile phone? Would a previous payment using a technology such as an ATM influence a consumer to adopt mobile payment? Another important question on compatibility is: are the goods and services available for purchase through mobile payments necessary for the consumer? Mallat (2007) concluded that mobile services' compatibility with user needs and life styles and the possibility of trying out a new service have a positive effect on attitudes towards adoption. And in a research conducted by Tornatzky & Klein (1982) on meta-analysis of innovation adoption, compatibility with an individual existing value was consistently related to innovation adoption. Interestingly, research by Kim and others (2010) on mobile payments indicates that compatibility has no significant effect on perceived usefulness and perceived ease of use.

3.4.4 Cost

A technology innovation usually comes with a cost which the consumer must pay for use. In traditional adoption research, the cost is incorporated in the relative advantage construct (Rogers, 1995). That is to say, the cost of an innovation in this case of mobile payments is compared against traditional payment methods such as cash, ATMs, credit cards and debit cards. It is better that cost be isolated from relative advantage to find out how it influences consumer adoption on mobile payments. This is so because consumers are so sensitive to costs associated with using a mobile technology. In the context of mobile payments, the transactional costs of mobile payments are often included in the price of the purchased item (Mallat, 2007). This pricing method would lead to higher price for an item bought using a mobile device compared to the price of the same item bought through other payment methods. The question is: are consumers willing to pay the overhead cost due to use of a mobile device in purchasing goods and services? Users may be concerned about the availability or price issues before they decide to use the innovation (Hsu et al., 2007). Therefore, it seems important to find out how much the user is prepared to pay to use a new system (Zmijewska, Lawrence & Steel, 2004) . Research by Pousttchi (2003) on conditions for acceptance and usage of mobile payment procedures, 70% of the consumers rated direct costs as very important.

Direct costs refer to transactional costs which should be considered thoughtfully due to the impact they might be on adoption of mobile payments.

Dahlberg and others (2008) cited high payment transaction fees as one limitation of payments based on billing systems. These are purchases of goods and services through the phone billing by mobile phone network operators. Wu and Wang (2005) found that high-cost negatively influences user's intention to use mobile commerce. Consumers are not willing to use mobile commerce when transaction costs are high and vice versa. Other researchers found that cost had significant effect in the perceived value; Kim and others (2010) on mobile Internet and Kleijnen, Wetzels and De Ruyter (2004) on wireless finance.

3.4.5 Trust and Security

Trust and security constructs have been combined together since they are related in some way. Trust is defined as the belief that vendors will perform some activity in accordance with customer's expectations (Gefen & Straub, 2004). The success of m-commerce applications relies on the user's trust, which will play a critical role in acceptance and widespread deployment (Shih & Shim, 2002). Security is the biggest issue in the field of m-commerce because without secure commercial information exchange and safe electronic financial transactions over mobile

networks, no one will trust m-commerce (Kadhiwal & Zulfiquar, 2007). Indeed the same applies to m-payments which is a subset of m-commerce and involves monetary value transactions. Varshney (2002), Pousttchi (2003), and Kadhiwal and Zulfiquar (2007) agree on the following security challenges: data confidentiality, authentication, integrity, authorization and non-repudiation. Most of the customers (96%) indicated that the confidentiality of data is the most important condition for accepting and using mobile payment procedures in a research done by Pousttchi (2003). Data confidentiality falls under security and in mobile payments context it means that only those involved in a transaction should know what was purchased and the payment made (Varshney, 2002). Mobile customers often feel more uncertain about mobile vendors and the outcomes of mobile transactions (Siau & Shen, 2003). Consumer's concerns about the privacy and security of mobile payments are commonly related to authentication and confidentiality issues as well as to concerns about secondary use and unauthorized access to payment and user data (Dewan & Chen, 2005). Authentication ensures parties with access to transactions are not impostors and are trusted (Kadhiwal & Zulfiquar, 2007).

Brown, Cajee,Davies and Stroelbel (2003) predicted mobile banking take-up in South Africa, finding high levels of perceived risk to be a major barrier to further adoption. In agreement, Lin and Wang (2006) found

that trust has a positive impact on customers' loyalty and satisfaction towards mobile commerce. Furthermore research by Shin (2009) on adoption of mobile wallet found that security and trust are important predictors of intention to use. Similarly, findings by Mallat (2007) indicate that trust has significant effect on adoption of mobile payments.

3.4.6 Network Externalities

A consumer and a merchant are part of a mobile payment network. A consumer's decision to adopt the network is significantly affected by the amount of merchants using it, since that amount determines the opportunities for consumers to use the new payment service (Mallat, 2007). The number of merchants for mobile payments might play a role in situations where agents are involved to exchange cash with electronic money. Network externality is also looked at from the perspective of consumers. How many have already adopted the payment system? Those that have adopted might have influence on those who have not yet adopted either because they are friends or relatives.

A survey by Goolsbee and Klenow (2002) on 110,000 US households in 1997 found that households are more likely to buy their first computer when a high fraction of people around them already own a computer. The study focused on the importance of network externalities in the diffusion of home computers. In a mobile payments study, Mallat (2007) found

that new consumers adopting the network indirectly increase the value of the network for all consumers because they attract new merchants to join the network.

3.4.7 Situational Factors

Belk (1975) postulates a categorization of five different situational factors: physical context, social context, temporal context, the task at hand and the role in which it is performed; and the antecedent states of action defined by momentary moods or conditions such as availability of change. Most theoreticians would agree that a situation comprises of a point in time and place (Belk, 1975). Since consumers can use mobile payments in a variety of locations and situations, it can be expected that situational factors impact their adoption (Mallat, 2007).

3.5 Mass Media Use

Rogers (1995) argues that mass media use is very important in making people know the existence of new technologies or products, especially at the early stage of diffusion. Mass media refers to the most effective channels of mass communication. The channels of communication include: printing media, radio, television, mobile phone and bill boards. It plays a critical role in providing people with the knowledge of new technology and in shaping people's perception of that technology. Research found that people's adoption of innovations is often related to

their level of mass media use (Jeffres & Atkin, 1996; Leung, 2007; Leung & Wei, 1998). The IDT by Rogers (1995) show that mass media affects the decision process of an individual to adopt the innovation. This study looked at media use in relation to innovation decision process.

According to PEEC (2003), innovation decision process is the mental process through which an individual (or other decision making unit) passes from first knowledge of an innovation to forming an attitude toward the innovation, to a decision to adopt or reject, to implementation of the new idea, and to confirmation of this decision. The five-step process is explained in table 3.1.

Step	**Process**	**Process description**
1	Knowledge	a person becomes aware of an innovation and has some idea of how it functions.
2	Persuasion	a person forms a favourable or unfavourable attitude toward the innovation.
3	Decision	a person engages in activities that lead to a choice to adopt or reject.
4	Implementation	a person puts an innovation into use.
5	Confirmation	A person evaluates the results of an innovation-decision already made.

Table 3.1: A 5-Step Process of Innovation-Decision

(Source: PEEC , 2003)

In the IDT, Rogers (1995), postulates that knowledge of an innovation is affected by the personal characteristics and the social system characteristics. Table 3-2 presents the categories of innovation adopters with their characteristics.

3.6 Categories of Innovation Adopters

Rogers (1995) categorized adopters of innovation as innovators, early adopters, early majority, late majority and laggards. These categories have distinguished characteristics as given in table 3.2.

Adopter Category	**Main characteristics**
Innovators	venturesome, educated, multiple information sources
Early adopters	social leaders, popular, educated
Early majority	deliberate, many informal social contacts
Late majority	skeptical, traditional, lower socio economic status
Laggards	neighbours and friends are main info sources, fear of debt

Table 3.2: Characteristics of Innovation Adopters

3.7 Chapter Summary

This chapter reviewed literature on means of making payments and money transfer, use of mobile payments in different countries and factors influencing adoption of mobile payment systems. Technology adoption

theories that have been reviewed include TAM, UTAUT and IDT. The study focused on relative advantage, complexity, compatibility, cost, security and trust, network externalities and situational factors. In addition, personal characteristics of innovation adopters and role of mass media were reviewed. Literature review has shown that different factors influence use of mobile payments systems differently in different countries.

CHAPTER 4: RESEARCH METHODOLOGY

4.1 Introduction

This chapter presents the way in which the research was planned and carried out. The study took on a qualitative interpretive research approach using a case study research strategy. Data was collected mainly through semi-structured interviews. The interviews were recorded, transcribed and then analyzed using qualitative techniques. The last section is about the limitations of the study.

4.2 Research Paradigm

A paradigm can be defined as a set of logically held together assumptions, concepts, and propositions that form the underlying basis used to construct a scientific investigation (Krauss, 2005). Based on the underlying paradigm, Information Systems research can be classified as positivist, interpretive, and critical (Klein & Myers, 1999). This research was guided by interpretive research philosophy which attempts to understand phenomena through the meanings that people assign to them (Orlikowski & Baroudi,1991). The role of an interpretivist is to seek to understand the subjective reality of those that they study in order to

make sense of and understand their motives, actions and intentions in a way that is meaningful for these research participants (Saunders, Lewis & Thornhill, 2003). In this study, consumers who used mobile phones for money transfers and payments shared experiences and the researcher interpreted their meanings.

4.3 Research Methods

A research method is a strategy of inquiry which moves from the underlying philosophical assumptions to research design and data collection (Myers, 1997). Research methods can be mainly categorized as either qualitative or quantitative (Myers, 1997; Myers & Avison, 2002).

This study adopted the qualitative research methods. According to Myers (1997), the qualitative research methods were developed in the social sciences to enable researchers to study social and cultural phenomena. In this case, diffusion is a process of social change in which an innovation is communicated over time through certain channels (mass media or interpersonal) among members of a social system (Lee, 2004; Wu & Wang, 2005).

Rubin and Babbie (2008) cite that one of the key strengths of qualitative research is the comprehensiveness of perspective it gives the researcher. The deeper understanding of a social or cultural phenomenon under study is achieved because qualitative research allows greater spontaneity

and adaptation of the interaction between the researcher and the study participant (Guest, Mack, MacQueen, Namey & Woodsong, 2005). The interactions give the participants of the study an opportunity to respond in their own words. This assists the researcher to gain more understanding and insight of the problem that is being pursued. Since the research was about exploring and understanding perceptions and experiences of consumers in using mobile payment systems, qualitative research method was deemed appropriate for the research.

4.4 Research Strategy

According to Meyers (1997) examples of qualitative methods are action research, case study research and ethnography regardless on the underlying research paradigm.

Robson (2002) defined a case study as a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence. The case study can be used to accomplish various aims such as to provide description, to test theory or to generate theory (Eisenhardt, 1989). And Oates (2006) defines three levels of cases as exploratory, descriptive and explanatory where exploratory case defines the dimensions of the problem, descriptive case is a rich description of issue being investigated and the specific context, and explanatory case

explains events and outcomes through examining complex concepts and their interrelationships as well as the linkage with theory.

This study used the case study research strategy to describe what mobile payments are and how people are utilizing them. Based on the argument by Saunders and others (2003) that a case study can be a worthwhile way of exploring existing theory; this study intended to explore theories on factors that influences adoption of mobile payments. The main theory that was reviewed was Rogers' Innovation Diffusion theory.

The study used Zap mobile payment system for Airtel Malawi as a case study. Zap was chosen as case study since it is the only mobile payment system being managed by a mobile network operator as such it does not require a consumer to have a bank account. Any Airtel customer with a valid personal identity card such as voter registration identity card was illegible to register for Zap. As such Zap seemed to have the potential of being widely used by people in both rural and urban areas.

4.5 Data collection

Data for the study was collected in the months of February and March in 2011. It was collected using semi-structured interviews, document analysis and participatory observations. Data was solicited from customers of Airtel Malawi in Blantyre District who registered and used Zap mobile payment system. Initially, a request for provision of contact

and basic details of Zap customers of Blantyre residence was made to Airtel Malawi. The details were meant to determine a sampling frame for the study. But the mobile network operator did not provide the requested data despite several attempts that were made by the researcher.

4.5.1 Participant identification

It was not easy to identify potential participants for the study since Airtel Malawi declined to provide a list of people who registered to use Zap in Blantyre. However, According to Saunders and others (2003) snowball sampling technique is commonly used when it is difficult to identify members of the desired population. The modes of communication that were used to identify the first participants for the study were face to face communication , an email was sent to a number of people and a posting was made on the social networking web sites namely www.facebook.com and www.linkedin.com.

The first person to be interviewed was a student at Malawi Polytechnic who was identified after making several announcements in different class sessions. The next two participants were identified through the email which was circulated. One of the recipients of the email knew two people who had once used Zap and replied to the email with mobile phone numbers of these two people to the researcher. The potential participants were phoned and interview appointments were made. After the

interviews, the two participants recommended their friends and relatives who they knew had used Zap. The researcher was given mobile phone numbers for these potential participants. In this way, the study took on the snowball sampling technique since a participant identified the next participant. However, in other cases, participants were not able to refer the researcher to another participant. This posed a challenge of identifying the next participant in order to start a new chain of participants.

4.5.2 Semi-Structured Interviews

Myers and Newman (2007) cite three types of qualitative interviews namely; structured interviews, semi-structured interviews and group interviews. The research used semi-structured interviews and used an interview guide (refer to appendix A) to ensure that the interviewer did not lose focus and purpose of the interview. A semi-structured interview gave room to the interviewee to give new insights since the questions were open-ended and the interviewee expressed themselves fully.

In the study, 14 interviews were conducted. The researcher developed themes from the interview transcription before conducting the next interview. This helped the researcher to note emerging themes as well as identify questions that were not answered in-depth in order to probe for more information in the next interview. This approach of interview

preparations enabled the researcher to determine new themes that were arising from the interviews. As the number of interviews approached eleven, the researcher noted that new themes were no longer emerging from the interviews; rather participants were emphasizing on what previous participants had already contributed. However, the researcher continued conducting interviews with the hope that new themes might emerge. Upon interviewing three more participants, the situation did not change hence the researcher decided to stop conducting the interviews. It was also determined that the collected information was enough to address the research objectives. Marshall (1996) argues that in practice, the number of required subjects usually becomes obvious as the study progresses, as new categories, themes or explanations stop emerging from the data. This is referred to as data saturation. Furthermore, Tuckett (2004) and Marshall (1996) agree that an appropriate sample size in qualitative research ranges from 10 to 100. In addition, Byrne (2001) argues that an appropriate sample size for a qualitative study is one that adequately answers the research question. Lastly, Mason (2010) states that frequencies are rarely important in qualitative research, as one occurrence of the data is potentially as useful as many in understanding the process behind a topic. This is because qualitative research is concerned with meaning and not making generalized hypothesis statements.

Out of the 14 interviews, 11 were done in English and only 3 were done in Chichewa. Choice of the language enabled the interviewee to explain their experiences clearly and comprehensively. In all the interviews, consent was sought from the interviewee. The interviews were recorded using sound recording software that comes with Windows 7 operating system. During the interview, note taking was also used concurrently with recording and this enabled capturing of follow up questions where there was need for clarification or more information. Recording was used since according to Walsham (2006), it is a truer record of what was said by the interviewee and recording frees the researcher to concentrate on engaging the interviewee.

4.5.3 Document Analysis

The study also gathered information from documents that were obtained from institutions that offer money transfer services. The documents included send forms and receive forms; deposit and withdraw slips for banks. Other documents were obtained from the mobile network operators and contained information on the services they offer together with the charges. In addition, information about what Zap can do and where Zap dealers are located was extracted from newspaper articles.

4.5.4 Participation observation

The researcher participated in the research by registering to Zap services in August 2010. The reason was to acquire hands-on experience and understanding on the usage of Zap mobile payment system before gathering data from research participants. This helped to determine the validity of information from the research participants especially on how the system works and it also enabled the researcher to illustrate the steps of carrying out Zap services in this thesis.

4.6 Analysis of Data

After each interview, the audio recording was transcribed in a text file. If the interview was conducted in Chichewa, the local language, the transcription was then translated into English. Bailey (2008) argues that representation of audible data into written form is the first step of analyzing data since it is an interpretive process.

Themes were developed from the transcriptions and were assigned short codes. Statements that were similar from the interviews were identified and arranged in categories based on the short codes using Weft Qualitative Data Analysis Software. New categories that emerged from succeeding interview transcriptions were added to the existing list of categories.

After arranging the data in categories based on themes, paragraphs in each category were compared and contrasted in order to discover similarities and differences; to build typologies; and to find sequences and patterns. In many qualitative studies whose purpose it is to generate knowledge about common patterns and themes within human experience, this process continues with the comparison of each new interview or account until all have been compared with each other (Thorne, 2000).

The themes that arose from the study were then compared with the themes from an Innovation Diffusion Theory to find out which factors are similar and different. The differences in the themes from the study and those from reviewed literature helped to uncover emerging themes which could be used to further build theories on customer adoption for mobile payment systems.

4.7 Limitations of the study

The study did not incorporate views from people in the rural village who were the targeted for this mobile payment system since the snowball sampling technique did to not lead the researcher to a person living the rural part of Blantyre District. Apart from the rural people other groups of people such as females were not well represented in the study. However some participants gave insight on people living in the rural

areas. The other limitation of the study was that Airtel Malawi declined to provide information about people in Blantyre who are using Zap. This problem was mitigated by using a snowball sampling technique.

4.8 Chapter Summary

The study adopted an interpretive qualitative research approach in which a case study was used. The participants were identified through a snowball sampling technique. Semi-structured interviews were used to collected data from people in Blantyre who used Zap (mobile payment system). The recorded interviews were transcribed. Qualitative data analysis was conducted in which codes and categories were formulated, compared and contrasted.

CHAPTER 5: RESEARCH FINDINGS AND DISCUSSIONS

5.1 Introduction

This chapter presents findings from the interviews that were conducted with Airtel consumers who registered and used Zap at least once. Discussions are done based on the findings and the literature on mobile payments. The first section looks at findings and discussions on the characteristics of people who used the mobile payment system. The second section presents findings and discussions on the ways and means in which people make payments and transfer money are presented. The other sections give details of findings and discussions on the use of mobile payments and the factors affecting use of mobile payment systems.

5.2 Characteristics of Research Participants

The researcher had no choice over the next person to interview since snowballing sampling strategy was used in identifying the participants. There were 14 people that were interviewed and all had used Zap at least once.

Details of the participants of the study are given in table 5.1 below.

		Frequency
Gender	Female	3
	Male	11
Age	Between 20 years and 30 years	13
	Above 30	1
Occupation		
	Students of IT Courses	4
	School Sales Agent	1
	Photographer	1
	Engineering Contractor	1
	Sign-writer	1
	Secondary School Teacher	1
	Unemployed	2
	Business Executive for MNO	1
	Telecommunications Engineer for MNO	2
Location (Blantyre District)		
	Chichiri	1
	Chilobwe	3
	Chilomoni	1
	Machinjiri	2
	Mandala	2
	Manja	1
	Namiyango	1
	Ndirande	1
	Zingwangwa	2
Education Qualifications		
	Malawi School Certificate of Education	14
	Diploma	6
	Advanced Diploma	1
	Bachelor's Degree	3

Table 5.1: Summary details of the participants of the study

All the participants of the research had attained a minimum education qualification of Malawi School Leaving Certification (MSCE) which is equivalent to Ordinary level. There were some who obtained Bachelors Degree in Information Technology and Engineering while some were pursuing bachelor's degree programmes. Information Technology and engineering courses impart technical knowledge and skills to the students.

According to Innovation Diffusion Theory (IDT) by Rogers (1995), educated people are one of the first people to adopt an innovation. The first people to adopt an innovation are referred to as innovators. The findings of this study concur with IDT since all participants had attained formal education, the lowest qualification being MSCE. Education assists people to learn on how to read and write. The users of mobile payment system need to know how to read system generated SMS messages which are written in both English and Chichewa. In addition, the consumer should be able to follow instructions and provide appropriate details when carrying out a Zap transaction. However, Zap was meant for rural people who would use the system to receive money from their relatives in urban areas. Malawi's national literacy rate is 42%, one of the lowest in Africa, with a literacy rate for women of only 34% (CARE-Malawi, 2009). It is estimated that some 85% of Malawi's population are living in rural areas (*ibid*). This would imply that most people in the rural areas are

illiterate. Nevertheless, there is still need for these people to know how to use the mobile payment system on their own. In some cases, the illiterate people might be assisted by the Zap agents when they want to transact. This might pose a risk of theft to the consumer by Zap agents who might not be trustworthy. In a scenario where the innovation is to be adopted massively by the rural 'illiterate' people, there should be strategies on how the rural masses should be oriented on the use of the system. From this, it can be learnt that formal education assists on the learning and understanding how to use the innovation, in this case, a mobile payment system. However, people who are not educated can also learn the procedures of operating Zap but with difficulties.

Prior to learning how to use the system, reading skills help people to know about the existence of an innovation through advertisements which are published or sent through various media.

The study also found that all participants had multiple sources of information. This is in agreement with Innovation Diffusion Theory by Rogers (1995) which points out that innovators have multiple sources of information. The means of getting information that were stated were reading newspapers, listening to the radio, watching television, chatting with friends, reading promotional SMS messages on mobile phones and browsing the Internet. One participant said:

> *"I like listening to the radio and browsing on the Internet. I also get news from people and the newspapers as well. Zap was common in the newspapers when it was being newly introduced."*

These sources of information helped them to know about the new innovation, what it does, how it operates, challenges and opportunities associated with the innovation.

Another personal attribute that was identified from the participants was curiosity. Some participants wanted to know how capable it is to send and receive money through a mobile phone and some wanted to find out opportunities of using mobile payment system. One participant had this to say:

> *"I heard somewhere that whenever innovation comes, the people willing to test, sometimes end up doing fine in life because if the thing is quite beneficial, they are the first ones to benefit"*

Curiosity, in this case, caused the consumers to start using the innovation as suggested by IDT (Rogers, 1995).

Some participants demonstrated that they are risk takers in the area of finance. People who are venturesome are among the group of innovators

in the Innovation Diffusion Theory (Rogers, 1995). Risk taking in finance is an example of being venturesome in the sense that anything can happen with the money in the Zap accounts. Some participants stated that they borrowed large sums of money from people which could have put them in trouble.

Most of the participants of the study were aged between 20 and 30 representing young adults. There was only one participant who was aged 38.

5.3 Means of Making Payments

The study found that the participants used cash, cheques, VISA card, ATM card and mobile phones as a means of making payments.

It was noted that cash was the most common means of payment for purchasing goods and services amongst the participants since it was mentioned by all participants and it was mentioned first by all participants. This supports a research by Ngalande (2003) cited in Saidi (2009) that Malawi is a cash-based country. Some participants had only used cash as a means of payment. Netherlands also mostly use cash (Jonker, 2007) as well as Japan (Humphrey, 2010). On the contrary, Humphrey (2010) found that USA and Europe mostly use cheques and electronic payments, respectively. One most probable reason why cash is mostly used in Malawi and other countries is that cash is very easy to

use and requires low literacy skills such as counting and recognizing numbers for a consumer to start using it hence there is no need of formal education qualifications. In addition, there is no additional transaction cost associated with using cash as compared to the other methods of payments.

It was noted that participants with information technology and engineering background were the only participants who had used VISA card for buying goods and services. However, the participants did not use this method often. One participant used the VISA card to purchase goods from outside Malawi and another participant used it to purchase goods in a local shop at a point of sale. Despite being mentioned by few participants, VISA card is still a means of making payments. This is what one participant said:

> *"I use cash and internet banking where as I was able to buy things outside the country using money in the VISA card."*

Only one participant indicated use of an ATM card to make purchases such as mobile phone airtime on the ATM.

> *"Apart from cashing from an ATM, I have also bought airtime from it, these are the only transactions I have made on an ATM."*

Payment by cheque was only mentioned by one participant suggesting that it is not a common means of making payments among the participants. According to Sorkin (2001), many sellers decline to accept personal cheques or accept them from selected buyers for fear that the cheque drawer might not have enough money in the bank account. This implies that cheques are not widely accepted by merchants due to this risk as compared to cash which almost all merchants accept. Furthermore, a merchant does not need to acquire any technological devices in order to accept payments through cash while with credit and debit cards the merchant requires to have POS devices. Humphrey (2010) argues that Europe had a well-established nationwide electronic payment system which facilitated use of technology-dependent payments before USA. Use of cheques, credit card and debit card requires a consumer to have a bank account. Finscope (2009) found that 80% of adult population in Malawi is unbanked. This means that the unbanked population cannot use cheque, credit cards and debit cards which are issued by banks.

Lastly, some participants used a mobile phone to make purchases. The findings on mobile phone payments are presented in the section 5.5.

5.4 Ways of Sending and Receiving Money

Apart from finding out the means of making payments, the research was also meant to find out ways in which money transfers are conducted. Money transfer systems facilitate making payments to merchants and service providers. On the other hand, money transfers enable friends and relatives to send and receive money not in exchange for goods and services. The participants indicated that they had sent and received money from friends and relatives through bank accounts, money transfer services, hand delivery by friends and family members, minibus drivers and mobile phones.

It was found that most participants had used bank account method to send or receive money. Bank account method was also the first to be mentioned by all participants suggesting that it is a common means of money transfer. In both Kenya and Tanzania, people preferred to use a family member or a friend to deliver money to relatives in the rural areas prior to introduction of mobile payment system (Camner et al., 2009). After the introduction of mobile payment system in Kenya, people preferred the mobile payment system for money transfer than the previous methods of money transfer. This is contrary to the participants of the research who did not show any intention of preferring mobile payment system for sending and receiving money to and from relatives

and friends. The participants did not frequently use their mobile phones for money transfer.

Some of the reasons why participants preferred to use banks for money transfer are as follows: firstly, banks are easily accessible in terms of travelling distance since all participants were from urban areas. Secondly, participants showed that they trust that money sent through the banks definitely reach the recipient as compared to the other means of payments. Money sent by hand risks being misused or stolen while money sent through mobile phone depends on the stability of the mobile network as well as the state of the mobile phone of the recipient. In a rare situation where money sent through the bank has not reached the account of the recipient, the sender has a stamped deposit slip which is reliable evidence for launching a complaint with the bank. Lastly, banks allow any person to deposit money into any account without any personal identification. Additionally, banks allow money transfers between banks. This is not the case with Zap mobile payment system which only allows those customers who are registered to Zap to send each other money. It excludes other customers in the same mobile network. With banks, it could be like only a bank account holder sending money to another bank account holder. Further restriction of Zap is that it is does not allow a customer to send money to a subscriber of another mobile network. There is no interoperability for Zap with other mobile

networks as it is with voice calls and SMS. Safaricom allows M-PESA users to send money to off network where as the competitor service from Airtel, Zap, only allows on network service, which is less convenient for users (Camner et al., 2009).

The money transfer services that participants used are Fast cash and MoneyGram. Fast cash is a service that is offered by Malawi Postal Corporations and is available in all post offices across the country. MoneyGram service is offered by MoneyGram International Money Transfer and is available in National Bank Branches, First Merchant Bank, Standard Bank, Victoria Foreign Exchange Bureau, Rennies Foreign Exchange Bureau and in main post offices. It was found that this money transfer service was preferred when sending money to areas where there are no banks. Finscope(2009) found that one reason why people do not use banks in Malawi is because banks are far away. This mostly applies to rural areas where there are no banks. Rural people would prefer to use money transfer services available in post offices which are closer to them. In Kenya, 24% of the people preferred using post offices for money transfer before the introduction of M-PESA (Camner et al., 2009). The other reason of preferring post offices for money transfer to rural areas was that both the sender and the recipient do not need to have an account like that of banks. Post office enables any person to send money to any person as long as the recipient has a valid

person identification document which is used when receiving the money at the post office. Apart from money transfer service for Malawi Posts Corporation which is called fast cash available in all post offices, participants also used MoneyGram which is offered in selected banks and selected post offices. This money transfer service is limited because there are few locations that offer this service as compared to fast cash and through bank accounts. Other money transfer services such as Western Union and Post Dot Net were not used by the participants.

Some participants used family members or friends to deliver money to someone by hand. It was noted that this method was used when the recipient had no bank account and the post office was not closer by. This was used as a last resort for sending money. One participant had this to say:

> *"The recipient did not have a bank account but I needed to send that person money to assist him.... I asked the person if a post office was nearby. But the person said no, 'send someone to bring the money'."*

It was learnt from one participant that money is also sent through minibus drivers. The sender calls the recipient to give details of the minibus and mobile phone number of the driver. One participant shared his experience:

"For instances with this painting job, my colleagues who are working in the remote areas like Nsanje inform me that they have run out of cash and paint. I go to the minibus driver and give him money and paint and tell him the place where people are waiting for the money and the paint. I take his phone number and minibus registration number."

The recipient follows up with the minibus driver through a mobile phone until they meet. In this method of money transfer, communication through mobile phones is essential to ensure that the money has been delivered successfully. This method of sending money through minibus drivers was found to be least used among the participants because of the higher risk of losing the money. There are so many minibuses and if the money is not delivered it is very difficult to trace the minibus driver despite taking note of the minibus registration number and the driver's mobile number. This method is suitable for sending small amounts of money as opposed to large amounts of money due the high risk. It was also learnt that the sender is sometimes charged for the service.

5.5 Use of Mobile Payment System

In order to use Zap, Airtel customer must first register to the service. Zap registration in Blantyre was being done at the following Airtel Centres: Chichiri Shopping Mall, Pagat House in Blantyre and Raynor House in

Limbe. At these centres a customer was required to fill in a Zap registration form.

The study found from the participants that Zap mobile payment system allows the customer to store, access and use money on the mobile phone SIM card as well as money in the bank account. It was learnt that Zap consumers are not accessing money in their bank accounts until Airtel Malawi clears with the Reserved Bank of Malawi and then partners with commercial banks.

Participants of the study demonstrated that they were aware of the following uses of Zap: purchasing airtime, sending and receiving money between two zap accounts, and money transfer between a Zap account and a bank account.

There were more participants who knew that Zap is used for purchasing airtime for a mobile phone than those who were not aware. Most of the participants who were aware of this service did not use the service but rather stressed that the service is possible. It was also noted that Zap enables a consumer to purchase airtime for any other Airtel subscriber. A participant had this to say about buying airtime using Zap:

> *"Most of the time, I use Zap for buying airtime for my phone … when I travel and I go to a place where there is no shop that*

sells airtime, Zap enables me to top up my phone anytime or at any place as long as there is network."

The participant was appreciating the convenience that Zap brings when purchasing airtime for a mobile phone i.e. regardless of location and time of the day. Refer to appendix E on the steps involved to purchase airtime using Zap on a mobile phone.

All the participants mentioned that Zap is used for sending and receiving money and that Zap is meant to target people living in the rural areas to ease on how they receive money from friends and family members in urban areas. Furthermore, it was stated that money transfers can only be done between two Zap accounts. Interestingly, it was possible for a Zap account holder to send electronic money to an Airtel mobile number that does not have a Zap account. In this case the recipient cannot get cash from an agent until a Zap account is created for that mobile number. It was found that some participants received money through Zap from family members. In order to get cash, the recipient has to send the equivalent amount to the Zap account of a Zap agent (Refer to appendix F on how to transfer money). A few participants showed interest to send money to relatives living in the rural areas. Only one participant sent money to a family member who was also a participant in the study. One of the recipients of Zap money had this to say:

> *"My sister sent me money from her Zap account. When she deposited the money in my account, the moment she deposited, I received an SMS. So after checking my account for Zap, I found that my account has been topped up".*

In the above narration the recipient shared the experience on how instant a Zap transaction is. It was found from the participants that a bank transaction is slower compared to a Zap transaction since the bank transaction involves filling in deposit or withdraw forms, waiting on a queue and then the teller capturing the details on the form into the system.

It was also learnt that Zap enables consumers to purchase goods and services from a shop that is registered to use Zap services. One respondent said:

> *"you go into a shop without cash, you call for that item, that item and ask how much it all costs. Let's say eight hundred fifty kwacha. You send the money through Zap to the shop zap account."*

Apart from sharing their experiences on what they have used in Zap, some participants gave insight as to what Zap would be able to offer in future once the Mobile Network Operator partners with other stakeholders like Commercial banks, ESCOM and Water Board. Some of services that were explained are: money transfer between a Zap account

and a bank account (refer to appendix G), money transfer between bank accounts (refer to appendix H), and utility bill payments. One participant had this to share:

> *"They informed us that they were actually carrying out a discussion with Water Board and ESCOM to carry out Zap transaction. ….so that they can carry out electronic transfers from one bank account to another bank account."*

Water Board and ESCOM provide water and electricity utilities in Malawi, respectively. The customer base for these utilities is broad and the consumers pay for these utilities on a monthly basis. Currently consumers pay for the utilities through bank deposits into the utility provider's bank account, auto-teller machines and through cash at the utility provider's offices.

5.6 Factors Affecting Use of Mobile Payment

The following subsections present research findings relating to factors that are affecting consumers of mobile payments.

5.6.1 Relative Advantage

Relative advantage is defined as the degree to which an innovation is perceived as better than the idea it supersedes (Hsu, et. al, 2007). Zap, a mobile payment system is a new innovation for money transfer as well as making payments. The ordinary ways of money transfer include: using

bank accounts, money transfer services, and through hand delivery. As for payment, the ordinary methods include: cash, debit card and cheque. Participants compared Zap with other ordinary methods of money transfer and payment methods which they have used. Previous researches (Jarnvenpaa & Lang, 2005; Carlsson, Walden & Bouwman, 2006, Mallat, 2007) found independence of time and place as relative advantage of mobile payments. This means that the consumers are able to transact at any time and any place where there is network coverage for the service providers. Ubiquitous is a general characteristic of mobile payments and the study found other ways in which a mobile payment method can be compared with ordinary means of money transfer and payment.

Firstly, a Zap customer can transact at any time of the day and anywhere as long as there is network for Airtel and the electronic money is in the mobile phone. In so doing, participants are saved from travelling distances when making payments for goods which are in electronic form such as airtime as well as paying for services that are administered remotely. On purchasing airtime, a participant said:

> *"When I receive an urgent message at mid-night, I always buy talk[air] time using Zap services on my phone and call somebody about that urgent thing."*

A Zap transaction occurs regardless of time and location in so doing enables the consumer to cut on travelling costs. In addition, it enables a consumer to a make purchase at an awkward time when a consumer cannot travel.

However, the service of loading electronic money into the Zap account requires Zap agents who are available at certain times of the day and at certain places. Whenever a Zap customer has money in the account, a transaction can be initiated and completed instantly on the spot. For a transaction such as purchasing airtime, it can be initiated and completed instantly as long as the network is functional. One participant said:

> *"The advantage of Zap is that it does not take time to buy mobile phone units."*

But loading airtime using a scratch card takes much longer since it requires scratching the card and then entering of the secret code on the phone. Transactions of sending money to a Zap agent is also completed instantly and the sender need to perform a similar transaction to get cash. Specifically, when a customer has money in the Zap account, it takes a shorter period to initiate and complete a transaction. Generally, the initiation is when the consumer starts filling in the details of the transaction and completion is when the consumer is given feedback that

the transaction has been performed. On one hand, the zap consumer enters a mobile number of the recipient and the amount of money when performing a money transfer transaction. On the other hand, a consumer at the bank will be required to fill bank account details of the recipient such as account name, number, branch, date of the day, amount in figures, amount in words, on a deposit slip and then append a signature. We observe that a bank deposit requires more information. In addition, the bank teller has to enter the filled details in the banking system to credit the account of the recipient. This task as well requires time. This therefore, shows that a bank deposit transaction requires more information as a result requires more time as compared to money transfer using Zap. One participant commended the Zap service by saying:

> *"… the transaction that takes place in a bank is longer compared to the Zap transaction…I got an SMS confirming receipt of the money right away."*

Being quickest way of sending and receiving money, Zap has the potential of being helpful to urgent and critical needs of money in remote areas where there are no banks and post offices as long as Zap agents are available.

It was found from the participants that time is also be saved by avoiding long queues inside the banking hall or at the ATM. This agrees with what Mallat (2007), Kim and others (2010) found in their studies. One participant said:

> *"With Zap, I don't have to stand in a queue while in a bank you talk of a minimum of 20 to 30 minutes. If it's a month-end it's about 2hours to send money."*

The above narration clearly shows that queues in a bank result into wastage of time for consumers especially during the end of the month when there are a lot of banking activities.

Secondly, the study found that the mobile payment system can provide safety to a consumer when used at an awkward time in a crime prone environment which other previous research on mobile payments did not reveal this relative advantage of mobile payment over traditional method of payment using cash. When cash is being used, a customer travels to purchase the goods or services, whereas the customer does not need to travel when using mobile payment system. This is applicable to all transactions that are associated with goods in electronic format or a service that is provided remotely. For instance to buy airtime using Zap, a consumer has to specify the mobile phone number and the amount of

money regardless of time and place. This helps a consumer to avoid traveling distances that are prone to crime at awkward times.

One participant had this to say:

> *"There are times when airtime is needed at an odd hour and no one is selling it on the roads, let's say in the middle of the night. You are able to buy just because they use wireless network. And that is also on a security of a person. Nowadays people are just like animals, 7 o'clock pm you find somebody attacking you on the road."*

The second form of security was that a mobile payment system enables a consumer to avoid carrying a lot of cash which is prone to theft and difficult to recover. High crime rate in Kenya, and Nairobi in particular created a greater demand for a safe way of sending money compared to Tanzania where the risk of robbery is lower (Camner et al., 2009). However, when a mobile phone which has electronic money is stolen the thief cannot access the money in the Zap account because it is protected by a password. In addition, the consumer is given the equivalent electronic money into the new SIM card and this is what one participant said:

> *"If you lose your phone, Zain Malawi said you can replace the SIM card and everything including money in Zap account will be*

as before it was stolen, so cash is insecure while Zap is secure."

Though none of the participants experienced theft of mobile phones but it was made clear that money in the Zap account is easily recovered when a phone is stolen compared with cash.

5.6.2 Complexity

According to Laukkanen and Lauronen (2005), complexity and problems with usability have contributed to low adoption of a variety of payment systems including smart cards and mobile banking. None of the participants complained on how the procedures are followed when carrying a Zap transaction. This might be because the participants attained basic education qualification. There was no participant from the rural areas in the study. However, it was learnt from the participants of the study that Zap was mostly meant for people living in the rural areas to receive money from relatives staying in urban areas. Some participants noted that most people in rural areas are illiterate and this might hinder fast adoption of mobile payment system. It is difficult for illiterate people to grasp the steps for performing transactions on Zap. One participant commented on this:

"I think the operating procedures are complicated for an illiterate person, most people in rural areas just know

answering incoming calls and dialing out. They even fail to save a phone number in their phone book.

To emphasize on how difficult it is for an illiterate person to operate Zap, one other participant said:

"It is difficult for people in rural areas especially those that are illiterate … there is need for the service providers to take an extra mile or gear ensuring that they orient people for them to get acquainted with the service so that they can use it easily."

It was noted that both the sender and the receiver of Zap money need to know how to send the money from one Zap account to another Zap account. Once the receiver has the money in the Zap account, the electronic money has to be transferred from the recipient's Zap account to the Zap account of the agent in order to get cash. In sending the money, there are several steps which require the sender to choose the Zap transaction type and then specify the recipient mobile number or nick-name, the amount being transferred and the password to authorize the transaction. It requires a consumer to be familiar with reading instructions and pressing appropriate buttons on the mobile phone.

Limitations of usability of mobile payment systems as indicated by Pagani and Schipani (2003), Siau and others (2004), Mallat(2007) were not evident in the study. However, the limitations might affect people in the rural areas on learning how to use the mobile payment system.

Despite the fact that this research is not concluding whether Zap is difficult to use or not, but the study agrees with other previous research findings by Laukkanen and Lauronen (2005), that complexity has an effect on the adoption of mobile payment system. That is, the more complex an innovation is; the more difficult it is for people to learn how to use.

5.6.3 Compatibility

More than half of the participants had a background of information technology and most of the participants had used an auto-teller machine which has similar features with mobile payment system such as use of password and menus. Zap uses technology which is menu driven like that of an ATM. Therefore, it was easy for them to learn and start using Zap. A participant shared this:

> *"I have an ATM card which I use to withdraw money, check balances, check mini statements and buy goods using VISA."*

This concurs with how Rogers (1995) defined compatibility as a degree to which an innovation is perceived as consistent with individual values, beliefs, past experiences and needs. Past experiences of using an ATM has assisted the participants on how to operate Zap. However, the participants did not use the innovation much on money transfer which is an indicator that the innovation is not addressing their needs.

All participants are categorized as young people since their ages ranged from 20 to 30 with only one participant being aged 38. It was also evident that all the participants liked communicating with fellow friends and family members through mobile phones. Purchasing of mobile units using mobile phone was found to be the most widely used services among the participants. This suggests that purchasing airtime for mobile phone is likely common among the youth since their life styles of socializing with friends require them to communicate with each other. Therefore it might be concluded that Zap services especially purchasing mobile phone units is compatible with the life style of young adults of communicating with one another. One participant said this:

> *"If I want information from somebody, I look for that somebody's mobile phone number and communicate to that person or else emailing."*

5.6.4 Cost

Findings from research studies done by Wu and Wang (2005), Dahlberg and others (2007) show that consumers are not willing to use mobile commerce when transaction costs are high. In this study, it was found that commissions are charged when a Zap customer is exchanging cash with electronic money from a Zap agent and when a Zap customer is sending electronic money to another Zap account holder. The only transaction that is free of charge is purchasing of airtime. When

purchasing goods in shop using a mobile payment system, there is an additional charge on top of the item price. These findings on cost of transaction agree with previous research findings that cost is a factor that affects consumers to use or not use mobile payments. Most of the participants were aware of costs associated with Zap transactions and they felt that the costs were high. One participant had this comment:

> *"… the commissions are rather on the higher side because if you go to a Zap agent to exchange your cash with electronic money, you give some money as a commission…So the higher the amount, the more the commission you pay to the dealer."*

Even though some participants were aware of transaction costs associated with Zap, they were not knowledgeable of the actual costs. The charge for depositing or withdrawing cash from a Zap agent is determined based on the amount of money to be transferred. For the other services, the charges are fixed (refer to fee structure for Zap in appendix D). In Kenya, there is a fixed fee for sending any amount of money to a registered user (up to the maximum limit of USD 460) while in Tanzania the fee scales with the amount transferred (Camner et al., 2009). The study found that the fee structure for Zap in Malawi is similar to that being used in Tanzania. It was found that the consumers are not well conversant with the costs that are being used for money transfer in

Zap possibly due variations of charges that are dependent of money being transferred. Camner and others (2009) argues that potential users need to have a clear understanding of the cost to compare it with other money transfer offers and when comparison process is too complex it can deter potential users from considering a new service. The variable charges require a consumer or an agent to refer to the fee structure whenever they are conducting a Zap transaction.

Furthermore, one participant complained about the fee that is charged when a consumer is checking balance of the Zap account. This is what he said:

> *"I do not like that every time I am checking my balance, it should deduct some amount from the account because checking balance for Standard bank through Internet banking is free."*

Consumers are cautious with costs involved in transactions and they compare with other similar functionalities in other systems. In this case, fee charged for checking balance on Zap is being compared with checking balance for a bank account using Internet banking.

5.6.5 Security and Trust

The findings of this study show that the participants felt that a large amount of money is safer in the mobile phone than cash. The maximum amount of money in Zap account is approximately USD 2,000.00. The participants felt confident that even if the mobile phone that has a Zap account is stolen, the thief cannot use the money in the phone due to the authentication mechanism. Similarly, Donner and Tellez (2008) suggest that mobile banking systems might reduce loss of money to petty theft. All the services on Zap require a password. Zap prompts for a password just before carrying out the last step in a transaction. The importance of authentication in mobile payment system was evident in this study and concurs with Pousttchi (2003) and Mallat (2007). One participant said:

> *"If you lose your phone, the money is safe because someone who steals your phone won't get the money, he doesn't know your password for Zap. So there is no way he can withdraw the money."*

Other participants expressed concern that money in the Zap account is not safe since some time they had experienced a loss on mobile phone credit. They expressed fear that the same can happen with their money in the Zap account. Another fear was that unauthorized people, who were called 'hackers', would access the electronic money in the phone as

they do with money in the bank account. This is how the fear was expressed by one participant:

> *"Hackers interfere with your phone number and sometimes with your bank account number … The case is with my bank account. I am not sure if it was the problem with the bank or hackers."*

Additionally, most participants expressed concern on the instability of the network while transacting using Zap. Some participants received a 'no network coverage' message from the mobile network operator when they were about to complete the Zap transaction even though there was network coverage in that place. Other participants received a message 'we are experiencing high load on the system. Please try your transaction later'. A participant complained as follows:

> *"But when we went to the Zap menu, most of the time when we try to send the money, it was saying 'no network'. So I don't know what the problem was."*

Another participant complained this way on the problems regarding network:

> *"When I was sending money, the money was not instantly delivered to the recipient but with banks the moment you send you are guaranteed that the recipient will receive the money.*

With Zap it might be telling you that the network is busy, we experience this with SMS messages. You find that you sent an SMS message yesterday and it reaches the recipient today."

The participants showed lack of trust in the mobile phone network due to its instability when sending SMS as well as in using the Zap services.

These network problems deny participants to use the service when they need it. Tsiakis and Sthephanides (2005) indicate service availability is a security requirement of any electronic payment system. The service should be continuously and uninterruptedly provided.

In addition, this network unreliability might result into lack of trust in the Zap service which deals with financial transactions. Despite that the participants expressed that a Zap transaction is faster than a bank transaction, this is only true when the mobile network is functioning properly. The network problems affected some participants to reconsider using Zap until there is an improvement in the network as indicated by one participant.

"If this network provider improves on network, then I will use Zap services again. However, if things are to remain like now then I will not use it again."

A perceived risk which is not evident in previous research of mobile payments is that mobile payments can lead a consumer to financial mismanagement since the electronic money is easy and tempting to use. Participants stated that it is easy to purchase items such as airtime using money in the mobile phone than cash since the transaction can take place anywhere and anytime.

Security issues on data confidentiality, integrity, non-repudiation (Pousttchi, 2003; Kadhiwal & Zulfiquar, 2007; Dewan & Chen, 2005) did not arise in the study despite having participants with engineering and information technology background.

5.6.6 Network Externalities

Mallat (2007) suggests that consumer perception on the number of merchants and other consumers using mobile payments influence their adoption decision and should be incorporated in the models that predict mobile payment adoption. In the case of Zap, it was found that there are few Zap agents within Blantyre who are operational.

> *"I had money in my phone and I wanted to buy things but there was no Zap dealer around. There are few dealers of Zap. So far the Zap dealer who is existing is only Peoples [Shop] which is opposite National Bank in Blantyre but all other dealers are no longer there because we had like Smart Malt close to Caltex filling Station in Blantyre but it's not*

operating right now, we had also Tompex hardware in Blantyre, in Zingwangwa there is one shop there."

The network of Zap agents is essential as it provides the interface between Zap consumers and the mobile network operator providing the mobile payment services. Some of the Zap agents were shop owners. As such consumers would buy goods using Zap money from these shops. Apart from the shops it was found that efforts are being made to extend that Zap services to bank services. Commercial banks have consumers who are also subscribers of Airtel Malawi and some consumers might find the Zap services convenient for managing their bank accounts.

Furthermore, Airtel Malawi has been negotiating with water and electricity utility providers to use Zap for bill payments. This is also another way of expanding the network for mobile payment consumers and merchants. Most households in urban areas use water and electricity meaning that the customer base is big and Zap can take that advantage of this customer base.

Zap money can only be sent from a holder of Zap account to another Airtel subscriber. Zap is only functional within the Airtel mobile network. This limits number of customers using the mobile payment system.

5.6.7 Situational Factors

There were several factors that depended on the context in which mobile payments are used. These include: Zap services availability and mobile network coverage.

Zap service availability encompasses availability of Zap agents, and availability of cash and electronic money with the Zap agent. Some participants compared the availability of Zap agents with availability of banking and post offices in terms of times of operation. It was noted that most banks are opened for customers from 8:00am to 3:00pm and some up to 3:30pm while post offices are opened for customers from 8:00am to 4:30pm. On the other hand, most shop owners who might be also Zap agents open their shops earlier than 8:00am and close later than 4:30pm. Consequently, a Zap customer can still transact after the banks and post offices are closed. In addition, the banks and post offices are closed from Saturday afternoon until Monday morning while a Zap agent remains open during the weekend as well. One participant commented:

> *"when you are very stranded and you want to send money to someone in the village on Sunday. … you cannot go to the bank since they don't open. With these Zap dealers, you will manage to send money to that person."*

In some cases a Zap agent can be there but without resources such as cash and electronic money.

Zap agents can only be found where there is network coverage. Some participants pointed out that some remotest areas are not covered by Airtel mobile network. These are the places where Zap would be most helpful because there are no banks and post offices. One participant had this to say:

> *"My mum is in Machinga and I haven't yet sent her any money because there is no network there."*

It is most likely that where there is no mobile network coverage there are no Zap agents. Therefore, Zap will not work in that area even if a person registers to Zap.

5.7 Use of media on Zap

According to PEEC (2003), there are five steps involved in the decision process of an innovation. These stages are: knowledge, persuasion, decision, implementation, and confirmation. Additionally, the innovation diffusion model by Rogers (1995) illustrates that the decision process of an innovation is influenced by the communication sources. It was found from the participants that Zap was advertised through the radio, television, flyers, posters,

newspapers and a minibus that was dedicated for Zap registration. Some of the participants explained that the adverts prompted them to register for the service. It was also mentioned by other participants that the time Zap was being introduced; there were many adverts as compared to now. To emphasize the role the media played in Zap, one participant made this comment:

> *"Around 2009, they really had time for advertising heavily about this Zap thing. I got them more especially from the radio and posters which they had put about Zap Khusa mmanja. I had some significant information about Zap. I actually registered the year when it was heavily advertised."*

The above narration indicates that the participant was prompted to register to Zap by media and knew more about Zap through the media. Some posters were meant to direct Zap customers where Zap agents are located in case they want to transact. And some participants made complaints about the unavailability of these posters which makes identification of Zap agents difficult. In addition some participants complained that Zap adverts are no longer being heard on audio-visual media and not seen in print media. A consumer sounded confused as he complained about disappearance of Zap advertisements.

> *"Of course nowadays the Zain people are quiet about this Zap. And I am not surprised the Zain people are silent. I don't think they are still promoting this service. I think they have stopped. I don't know."*

The consumer is not aware of what is happening to the service that is whether the service is continuing or it has stopped.

The study found that the media played a role in the innovation decision process and therefore concurs with the model of innovation diffusion.

Although most participants have been registered to Zap for at least a year, they have not used Zap often. Twelve months is a long period such that if the mobile payment solution was meant for pertinent needs of participants, the participants would have used it several times. In addition, most consumers expressed intention to use Zap in future only if the service is improved in the following ways: introduced to more people through mass media; given an assurance that money in Zap account is safe; improvement on the network instability; and recruitment of more Zap agents across the country. This implies that some participants are on the verge of deciding whether to stop or continue using Zap.

Additionally, most of the participants in the study were knowledgeable on sending and receiving money as well as purchasing mobile phone units

but were not conversant with other features of Zap. In addition, they felt that many people are not aware of Zap which could be due to poor awareness to potential consumers. Here are comments from some of the participants:

> *"People do not know much about Zap and there are some things which we know and some things which we don't."*
>
> *"Unless they introduce Zap more to people. People are confused. what's Zap? what's Zap?. They don't know what exactly Zap is and they haven't been informed more about Zap in general."*

This knowledge gap suggests inadequate content in the advertisements in the media and maybe inadequate number of advertisements for customers to grasp on capabilities of Zap. One participant portrayed confusion on whether Zap is still there or not because the advertisements are no longer seen and are no longer on television and radio. And it is more likely for such kind of people to get discouraged and decide to discontinue using the mobile payment solution despite the opportunities it offers.

5.8 Chapter Summary

This chapter presented findings of the study together with discussions. Most participants preferred to use cash compared to cheques, VISA card, ATM cards and mobile phone to pay for goods and services. The most

preferred means of money transfer among the participants was through a bank account. Other means of transferring money are by: hand, minibuses, money transfer services and mobile phones. The factors that affect use of mobile payment systems include: relative advantage, complexity, compatibility, cost, perceived risks and trust, network externalities, situational factors, characteristics of innovation adopters and use of mass media use. The next chapter concludes the thesis by reviewing the objectives of the study, direction for future research and what needs to be improved for successful adoption of mobile payments.

CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This chapter reviews the study objectives, presents the theoretical and practical contribution of the study and suggests recommendations on how to improve consumer adoption on mobile payment systems based on the factors that were found. Further research emanating from this research is presented in the last section.

6.2 Review of Study Objectives

The research attempted to answer the research question:

'*What factors are affecting consumers in adopting mobile payment systems in Malawi*?'

In order to answer the research question, the following research objectives were set:

- To find out the existing methods of making payments and money transfer;
- To investigate how people are using mobile payment systems; and
- To investigate the factors affecting use of mobile payment systems.

The study has shown that most participants preferred to use cash when purchasing goods and services because cash is easy to use and is widely accepted by merchants. Additionally, the study identified other means of payment which include use of ATM cards, VISA cards, cheque and mobile phone money. ATM card, cheque and VISA cards require a customer to have a bank account since they are issued by banks to account holders. However, these payment instruments were not commonly used among the participants due to their associated transaction costs.

The participants preferred to use bank accounts for money transfer since the consumers are guaranteed that the money will reach the recipient. Money transfer through bank accounts is convenient for sender and recipient who are closer to the urban areas where there are banks. For remittances from urban to rural areas, the study has shown that the participants mostly used post offices which are available in rural areas and that both the sender and the recipient do not need to have bank accounts. Apart from using a bank account and fast cash for money transfer, some participants used MoneyGram, hand delivery and mobile phone.

On the second objective, the study has shown that the participants used mobile payment system for sending and receiving money from friends

and relatives. Money transfer using Zap was limited to only those who registered to Zap. Additionally, it was found that mobile payment system was used to purchase airtime for their mobile phones as well as for their relatives and friends in Airtel mobile network. Few participants had used Zap for money transfer as compared to purchasing airtime for friends and relatives. Furthermore, it was learnt that Zap will be used to conduct and manage money transfers between bank accounts when Airtel Malawi gets a clearance from Reserve Bank of Malawi and commercial banks.

The study has shown that mobile payment systems have relative advantages over other methods of making payments and money transfer. The relative advantages include: time-place independent transaction, fast transaction, safety. The other factors that affect use of mobile payment system are: complexity of the innovation, costs involved with mobile payments transactions, compatibility with consumer's life style and values, perceived risk and trust, network externalities, and situational factors.

Furthermore, the study has shown that mass media influences consumers to acquire the knowledge of the innovation and persuade the consumers to use the innovation by emphasizing on the potential benefits of the innovation. In addition, the mass media assist the consumers on how to use the innovation. The participants of the study

were prompted to register for Zap, they used it and now deciding whether to continue using it or not.

6.3 Theoretical Contribution

The innovation diffusion theory (IDT) by Rogers (1995) is a generic theory that applies to any type of innovation. However, innovations have specific characteristics which cannot be covered in detail by the IDT. A review of previous research work on mobile payments that was carried out by Dahlberg and others (2007) identified specific factors for mobile payment adoption. In addition, Mallat (2007) revealed other specific factors for mobile payment adoption and stated that there is need to develop a specific consumer adoption model for mobile payments.

This study which was conducted in Malawi supports the factors that were found by Mallat (2007) as well as Dahlberg and others(2007). On relative advantage, this study contributes that mobile payments offer security to a consumer as compared to the fear that a consumer has on security issues of a mobile payment system. In addition, financial mismanagement was identified as a perceived risk of mobile payment system by participants. Cash management and service availability are additional situational factors that affect use of mobile payment systems. These emerging factors contribute to the existing theory on adoption of mobile payment systems.

6.4 Practical Contribution

The focus of this study was on consumer adoption and not how the mobile payment system works. It was found that money transfer is only carried out between Airtel customers who are registered to Zap. In other words, a customer needs to have Zap account in order to send and receive electronic money. A Zap account is either the mobile phone number or a unique nick-name that a consumer chooses. Contrary to this mode of operation of money transfer, it was found Zap enables a Zap account holder to send electronic money to any mobile number within the Airtel network. If the recipient does not have a Zap account, it is not possible for the recipient to transfer the electronic money to a Zap agent to get the cash. This is because the Zap money only moves from account to another account. This implies that the electronic money sent to a recipient without a Zap account, is temporarily held in another account maintained by the mobile network provider. The scenario would result into accumulation of unclaimed electronic money from the consumers who are not on Zap but they received an SMS notifying them that they have received electronic money.

6.5 Recommendations

The following are the suggested recommendations based on the factors affecting use of mobile phone for making payments and money transfers.

The problem of mobile network instability was a major concern from the consumers. Considering that mobile payments involve financial transactions, it is of paramount importance for the mobile network operator to improve the network so that consumers can build trust on the performance of the network.

In a situation where a Zap account holder sends electronic money to an Airtel customer who does not have a Zap, it is not possible for the recipient to get cash from the Zap agents. The solution would be to restrict money transfer transaction to mobile numbers that have Zap accounts. Alternatively, allow customers who do not have Zap accounts to receive the electronic money but security issues have to be strengthened. The security involves looking at how to ensure that only the owner of the mobile phone should cash the electronic money from the agent.

Zap has to be integrated with commercial banks in order to broaden the customer base since it will serve those that have bank accounts and those that do not have. In addition, Zap has to be integrated with payment of utilities such as water and electricity. Payments for these

utilities are characterized with long queues which might be avoided by using mobile payment. Lastly, Zap can be considered for making payments of fuel at a filling station.

6.6 Further Research

The main objective of this qualitative study was to explore factors affecting use of mobile payment system. Though the factors were found, the study cannot generalize the factors to the entire mobile phone subscribers of Airtel. Hence there is need to conduct a quantitative study to assess the significance of the identified factors to Airtel customers in Malawi.

Another possible further research would be to compare mobile payments and mobile phone banking in the context of Malawi. Mobile payments are managed by mobile network operator while mobile phone banking is managed by a banking institution with support from a mobile network operator. The research would focus at technical implementation and its implications to consumers and merchants.

This study focused only on consumers of mobile payment systems. However, merchants of mobile payment systems have a crucial role to play as well on the adoption of mobile payment systems. It would be essential to investigate factors that are affecting merchants in adopting mobile payments systems. This would help unveil the barriers that exist

for merchants to join the mobile payment network and hence proposition of strategies to overcome the barriers

Lastly, future research on adoption of mobile payment systems should investigate both adopters and non-adopters. One major limitation of this study was that the researcher gathered information only from the people who had adopted mobile payment system. This resulted into biasness of the findings in the sense that the research results were overly positive on advantages of mobile payment system. The biasness in the results of the research would have been controlled if views of both adopters and non-adopters of mobile payment systems were incorporated in the research.

REFERENCES

Au, Y.A. & Kauffman, R.J.(2007). The economics of mobile payments: Understanding stakeholder issues for an emerging financial technology application. *Electronic Commerce Research and Applications*, 7(2), 141–164.

Bailey, J. (2008). First Steps in qualitative data analysis: transcribing. *Family Practice*, 25, 127-131.

Belk, R.W. (1975). Situational variables and consumer behavior. *The Journal of consumer research*, 2(3), 157-164.

Brancheau, J.C. & Wetherbe, J.C.(1990). The adoption of spreadsheet software: testing innovation diffusion theory in the context of end-user computing. *Information Systems Research*, 1(2), 115.

Brown, I.,Cajee, Z., Davies, D. & Stroebel, S.(2003). Cell phone banking: Predictors of adoption in South Africa–an exploratory study. *International Journal of Information Management*, 23(5), 381–394.

Byrne, M.(2001). Sampling for qualitative research. *AORN journal*, 73(2), 494.

Camner, G., Pulver, C. & Sjoblom, E.(2009). What makes a successful mobile money implementation? - M-PESA in Kenya and Tanzania, *Financial Sector Deepening*.

CARE Malawi (2009). Trend And Problem Analysis : Livelihood Vulnerability And Insecurity In Malawi. Accessed on Nov. 20, 2011 from http://www.caremalawi.org/About_Malawi.html.

Carlsson, C., Walden, P. & Bouwman, H. (2006). Adoption of 3G+ services in Finland. *International Journal of Mobile Communications*, 4(4), 369–385.

Carr, M. (2007). Mobile Payment Systems and Services: An Introduction. Accessed on Oct. 17, 2010 from http://www.mpf.org.in/pdf/Mobile%20Payment%20Systems%20and%20Services.pdf.

Central-Intelligence-Agency (2011). CIA - The World Factbook-Malawi. Accessed on Mar. 20, 2011 from https://www.cia.gov/library/publications/the-world-factbook/geos/mi.html.

Chen, L. (2008). A model of consumer acceptance of mobile payment. *International Journal of Mobile Communications*, 6(1), 32–52.

Dahlberg, T., Mallat, N. & \Ö\örni, A.(2003). Trust Enhanced Technology Acceptance Model–Consumer Acceptance of Mobile Payment Solutions: Tentative evidence'. *Stockholm Mobility Roundtable*, 22–23.

Dahlberg, T., Mallat, N., Ondrus, J. & Zmijewska, A.(2008). Past, present and future of mobile payments research: A literature review. *Electronic Commerce Research and Applications*, 7(2), 165–181.

Davis, F.D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly*, 319–340.

Davis, F.D., Bagozzi, R.P. & Warshaw, P.R.(1989). User acceptance of

computer technology: a comparison of two theoretical models. *Management science*, 982–1003.

Dewan, S.G. & Chen, L.(2005). Mobile Payment Adoption in the USA: A Crossindustry, Cross-platform Solution. *Journal of Information Privacy & Security*, 1(2), 4–28.

Donner, J. & Tellez, C.A.(2008). Mobile banking and economic development: Linking adoption, impact, and use. *Asian Journal of Communication*, 18(4), 318–332.

ECB (2004). Eurpoean Central Bank: Paper Issues for ECB Conference on 10 November 2004: e-payments without frontiers. Accessed on Oct. 13, 2010 from http://www.ecb.europa.eu/pub/pdf/other/epaymentsconference-issues2004en.pdf.

Economides, N.(1996). The economics of networks. *International Journal of Industrial Organization*, 14(6), 673-699.

Edgar Dunn and Company (2007). 2007 Mobile Financial Services Study. Edgar, Dunn and Company in cooperation with Mobile Payments World.

Eisenhardt, K.M.(1989). Building theories from case study research. *Academy of management review*, 14(4), 532–550.

FMB (2010). FMB - Bringing banking closer to the people. Accessed on Nov. 24, 2010 from http://www.fmbmalawi.com/news22.html

Gans, J.S. & Scheelings, R.(1999). Economic Issues Associated with Access to Electronic Payments Systems. Accessed on Oct. 10, 2010 from http://www.mbs.edu/home/jgans/papers/cecs.pdf

Gefen, D. & Straub, D.W. (2004). Consumer trust in B2C e-Commerce and the importance of social presence: experiments in e-Products and e-Services. *Omega*, 32(6), 407–424.

Goolsbee, A. & Klenow, P.(2002). Evidence on Learning and Network Externalities in the Diffusion of Home Computers. *Journal of Law and Economics*, 45, 317-343.

GSM (2011a). GSM Coverage Maps | Malawi | CelTel Limited (Zain Malawi) | Coverage and Network Information. Accessed on Nov. 20, 2011 from http://92.52.91.22/maps/network_info.php?nid=4247&org_id=4241&cid=183.

GSM (2011b). GSM Coverage Maps | Malawi | Telekom Networks Malawi Ltd (TNM) | Coverage and Network Information. Accessed on Nov. 20, 2011 from http://92.52.91.22/maps/network_info.php?nid=3769&org_id=219&cid=183.

Guest, G., Mark, N., Macqueen, K., Namey, E. & Woodsong, C.(2005). *Qualitative research methods: A data collector's field guide*, Family Health International.

Heeks, R. & Jagun, A.(2007). *Mobile Phones and Development: The Future in New Hands?*, University of Sussex. Institute of development studies (IDS).

Hofstede, G. (1984). Culture's consequences (abridged edition). *Beverly Hills: Sage*.

Hsu, C.L., Lu, H.P. & Hsu, H.H. (2007). Adoption of the mobile Internet: An empirical study of multimedia message service (MMS). *Omega*, 35(6), 715–726.

Hughes, N. & Lonie, S. (2011). M-PESA: Mobile Money for the "Unbanked" Turning Cellphones into 24-Hour Tellers in Kenya. *Innovations: Technology, Governance, Globalization*, 2(1-2), 63-81.

Humphrey, D.B.(2010). Retail payments: New contributions, empirical results, and unanswered questions. *Journal of Banking & Finance*, 34(8), 1729–1737.

IndeBank (2010). IndeBank. Accessed on Nov. 24, 2010 from http://www.indebank.com/sms_banking.html.

ITU (2011). World Telecommunication/ICT Indicators Database - Mobile Cellular Subcriptions. Accessed on Mar 11, 2011 from http://www.itu.int/ITU-D/ict/statistics.

Jarvenpaa, S.L. & Lang, K.R.(2005). Managing the paradoxes of mobile technology. *Information Systems Management*, 22(4), 7–23.

Jeffres, L. & Atkin, D.(1996). Predicting use of technologies for communication and consumer needs. *Journal of Broadcasting & Electronic Media*, 40(3), 318–330.

Jonker, N. (2007). Payment instruments as perceived by consumers– Results from a household survey. *De Economist*, 155(3), 271–303.

Kadhiwal, S. & Zulfiquar, A.U. (2007). Analysis of mobile payment security measures and different standards. *Computer Fraud & Security*, 2007(6), 12–16.

Karnouskos, S. & Fokus, F.(2004). Mobile payment: a journey through existing procedures and standardization initiatives. *IEEE Communications Surveys and Tutorials*, 6(4), 44–66.

Khanje, T.(2010). Zain Malawi launches mobile banking service. Accessed on Nov. 24, 2010 from http://www.bnltimes.com/index.php?option=com_content&task=view&id=1692.

Kim, C., Mirusmonov, M. & Lee, I.(2010). An empirical examination of factors influencing the intention to use mobile payment. *Computers in Human Behavior*, 26(2010), 310-322.

Kim, J., Lee, I. & Lee, Y.(2002). Exploring the mobile Internet businesses from a user perspective: A cross-national study in Hong Kong, Japan and Korea. *Proc. The First Mobile Roundtable*.

Kleijnen, M., Wetzels, M. & De Ruyter, K.(2004). Consumer acceptance of wireless finance. *Journal of Financial Services Marketing*, 8(3), 206–217.

Klein, H.K. & Myers, M.D.(1999). A set of principles for conducting and evaluating interpretive field studies in information systems. *MIS quarterly*, 23(1), 67–93.

Krauss, S.E. (2005). Research paradigms and meaning making: A primer. *The Qualitative Report*, 10(4), 758–770.

Laukkanen, T. & Lauronen, J.(2005). Consumer value creation in mobile banking services. *Internation Journal of Mobile Communications*, 3(4), 325-338.

Lee, I., Kim, J. & Kim, J.(2005). Use contexts for the mobile internet. A longitudinal study monitoring actual use of mobile internet services. *International Journal of Human-Computer Interaction*, 18(3), 269-292.

Lee, T.T.(2004). Nurses' adoption of technology: Application of Rogers' innovation-diffusion model* 1. *Applied Nursing Research*, 17(4), 231–238.

Leung, L. (2007). Unwillingness-to-communicate and college students' motives in SMS mobile messaging. *Telematics and Informatics*, 24(2), 115–129.

Leung, L. & Wei, R.(1998). Factors influencing the adoption of interactive TV in Hong Kong: Implications for advertising. *Asian Journal of Communication*, 8(2), 124–147.

Lim, A.S.(2008). Inter-consortia battles in mobile payments standardisation. *Electronic Commerce Research and Applications*, 7(2), 202–213.

Lin, H.H. & Wang, Y.S. (2006). An examination of the determinants of customer loyalty in mobile commerce contexts. *Information & Management*, 43(3), 271–282.

MACRA (2009). Malawi Communication Regulatory Authourity - Licence Revocation (G-Mobile). Accessed on Mar. 21, 2011 from http://www.macra.org.mw/publications.php.

Mallat, N.(2007). Exploring consumer adoption of mobile payments-A qualitative study. *The Journal of Strategic Information Systems*, 16(4), 413–432.

Mallat, N., Rossi, M. & Tuunainen, V.K.(2004). Mobile banking services. *Communications of the ACM*, 47(5), 42–46.

Marshall, M.N.(1996). Sampling for qualitative research. *Family Practice*, 13, 522–525.

Mashni, R. (2010). Zain expands 'Zap' Mobile Commerce service to Malawi, Niger and Sierra Leone. Accessed on Apr. 9, 2010 from http://www.ameinfo.com/220486.html.

Mason, M. (2010). Sample Size and Saturation in PhD Studies Using Qualitative Interviews. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*, 11(3). Accessed on Jun. 5, 2011 from http://www.qualitative-research.net/index.php/fqs/article/viewArticle/1428/3027.

Mgwadira, S.(2010). Opportunity Bank's "Banki M'manja" - Innovation in Brachless Banking. *The Nation Newspaper 27th May 2010*.

Moore, G.C. & Benbasat, I.(1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information systems research*, 2(3), 192–222.

Msiska, B.(2009). *Challenges and Opportunities in Using GIS for Monitoring and Management of HIV/AIDS: A Case Study from Malawi*. Norway: Univesity of Olso.

Munthali, K.(2010). Dstv subscribers to pay through Zain's ZAP. *The Nation Newspaper 27th April, 2010*.

Must, B. & Ludewig, K.(2010). Mobile money: cell phone banking in developing countries. *Policy Matters Journal*, 7(2), 27-33.

Myers, M.D.(1997). Qualitative research in information systems. *MIS quarterly*, 21(2), 241–242.

Myers, M.D. & Avison, D.(2002). An introduction to qualitative research in information systems, SAGE Publications Ltd.

Myers, M.D. & Newman, M.(2007). The qualitative interview in IS research: Examining the craft. *Information and organization*, 17(1), 2–26.

NBM (2010). NBM: National Bank of Malawi. Accessed on Nov. 24, 2010 from http://www.natbank.co.mw/index.php?pagename=sms_banking.

NSO (2009). The National Statistical Office of Malawi. Accessed on Mar. 18, 2011 from http://www.nso.malawi.net/

Oates, B.J. (2006). *Researching information systems and computing*, Sage Publications Ltd.

Ondrus, J. & Pigneur, Y.(2006). Towards a holistic analysis of mobile payments: A multiple perspectives approach. *Electronic Commerce Research and Applications*, 5(3), 246–257.

Orlikowski, W.J. & Baroudi, J.J. (1991). Studying information technology in organizations: Research approaches and assumptions. *Information systems research*, 2(1), 1–28.

Pagani, M. & Schipani, D.(2003). Motivations and barriers to the adoption of 3G mobile multimedia services: An end user perspective in the Italian market. In pp. 957–960.

PEEC (2003). Diffusion of Innovation Theory resources. Accessed on Oct. 25, 2010 from http://www.peecworks.org/PEEC/PEEC_Gen/I00045B6A.

Pousttchi, K. (2003). Conditions for acceptance and usage of mobile payment procedures. In pp. 201–210.

Robson, C. (2002). *Real World Research* 2nd ed., Oxford: Blackwell.

Rogers, E.M.(1995). *Diffusion of innovations* 4th ed., New York: Free Press.

Rogers, E.M. (2003). *Diffusions of Innovations* 5th ed., New York: Free Press.

Rubin, A. & Babbie, E.(2008). *Research Methods for social work* 7th ed., Canada: Brooks/Cole, Cengage Learning.

Saidi, E. (2009). Mobile Opportunities, Mobile Problems: Assessing Mobile Commerce Implementation Issues in Malawi. *Journal of Internet Banking and Commerce*, 14(1), 1–10.

Saunders, M., Lewis, P. & Thornhill, A.(2003). *Research methods for Business Students* 3rd ed., Prentice Hall.

Schwiderski-Grosche, S. & Knospe, H.(2002). Secure mobile commerce. *Electronics & Communication Engineering Journal*, 14(5), 228–238.

SEEP (2009). Expanding Outreach in Malawi: OIBM's Efforts to Launch a Mobile Phone Banking Program. Accessed on Nov. 24, 2010 from http://www.google.mw/gwt/x?q=sms+banking+in+Malawi&ei=lEDtTKDpEZSPjAeYn6LOAw&ved=0CBEQFjAF&hl=en&source=m&rd=1&u=http://www.opportunity.org/wp-content/uploads/2010/07/Expanding-Outreach-in-Malawi-OIBMs-Efforts-to-Launch-a-Mobile-Phone-Banking-Program.pdf.

Shih, G. & Shim, S.S.(2002). A service management framework for M-commerce applications. *Mobile Networks and Applications*, 7(3), 199–212.

Shin, D.H. (2009). Towards an understanding of the consumer acceptance of mobile wallet. *Computers in Human Behavior*, 25(6), 1343–1354.

Siau, K. & Shen, Z.(2003). Building customer trust in mobile commerce. *Communications of the ACM*, 46(4), 94.

Siau, K., Sheng, H., Nah, F. & Davis, S. (2004). A qualitative investigation on consumer trust in mobile commerce. *International Journal of Electronic Business*, 2(3), 283–300.

Sorkin, D.E. (2001). Payment methods for consumer-to-consumer online transactions. *Akron Law Review*, 35(1), 1-30.

Stavins, J. (2001). Effect of Consumer Characteristics on the Use of Payment Instruments. *New England Economic Review*, 2002(3), 19-31.

Straub, D.W., Karahann, E. & Chervany, N.L. (1999). Information technology adoption across time: a cross-sectional comparison of pre-adoption and post-adoption belief. *MIS Quarterly*, 23(2), 183–213.

Thorne, S. (2000). Data analysis in qualitative research. *Evidence Based Nursing*, 3, 68-70.

Tornatzky, L.G. & Klein, K.J. (1982). Innovation characteristics and innovation adoption-implementation: A meta-analysis of findings. *IEEE Transactions on engineering management*, 29(1), 28–45.

Tsiakis, T. & Sthephanides, G.(2005). The concept of security and trust in electronic payments. *Computers & Security*, 24(1), 10–15.

Tuckett, A. (2004). Qualitative research sampling - the very real complexities. *Nurse researcher*, 12(1), 47-61.

Varshney, U. (2002). Mobile payments. *Computer*, 35(12), 120–121.

Venkatesh, V. & Davis, F.D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management science*, 46(2), 186–204.

Venkatesh, V., Morris, M., Davis, G.B. & Davis, F.D. (2003). User acceptance of information technology. A unified view. *MIS Quarterly*, 3, 425-478.

Walsham, G. (2006). Doing interpretive research. *European Journal of Information Systems*, 15(3), 320–330.

Wandawanda, B.(2005). *Business dexterity: Can mobile business solutions offer a sustainable competitive advantage?* Masters dessertation. United Kingdom: University of Derby.

World-Bank (2011). World Bank - Malawi Data. Accessed on Mar. 20, 2011 from http://data.worldbank.org/country/malawi.

Wu, J.H. & Wang, S.C. (2005). What drives mobile commerce?:: An empirical evaluation of the revised technology acceptance model. *Information & Management*, 42(5), 719–729.

Zain (2011). Zain dials up mobile banking in Africa with Zap. Accessed Mar. 8, 2011 from http://www.zain.com/muse/obj/lang.default/portal.view/content/Media%20centre/Press%20releases/ZapLaunchAfrica.

Zain (2010). Zain expands 'Zap' Mobile Commerce service to Malawi, Niger and Sierra Leone. Accessed on Mar. 8, 2011 from http://www.zain.com/muse/obj/lang.default/portal.view/content/Media%20centre/Press%20releases/ZapExpansion.

Zain Marketing Director (2010). Dstv subscribers to pay through Zain's ZAP. *Nation Newspaper 27th April 2010*.

Zmijewska, A., Lawrence, E. & Steele, R.(2004). Classifying m–payments– a user–centric model. In *Proceedings of the Third International Conference on Mobile Business (M–Business 2004)*

APPENDICES

APPENDIX A: INTERVIEW GUIDE FOR THE CONSUMER

CONSUMER ADOPTION ON MOBILE PAYMENT SYSTEMS IN MALAWI: CASE OF ZAP

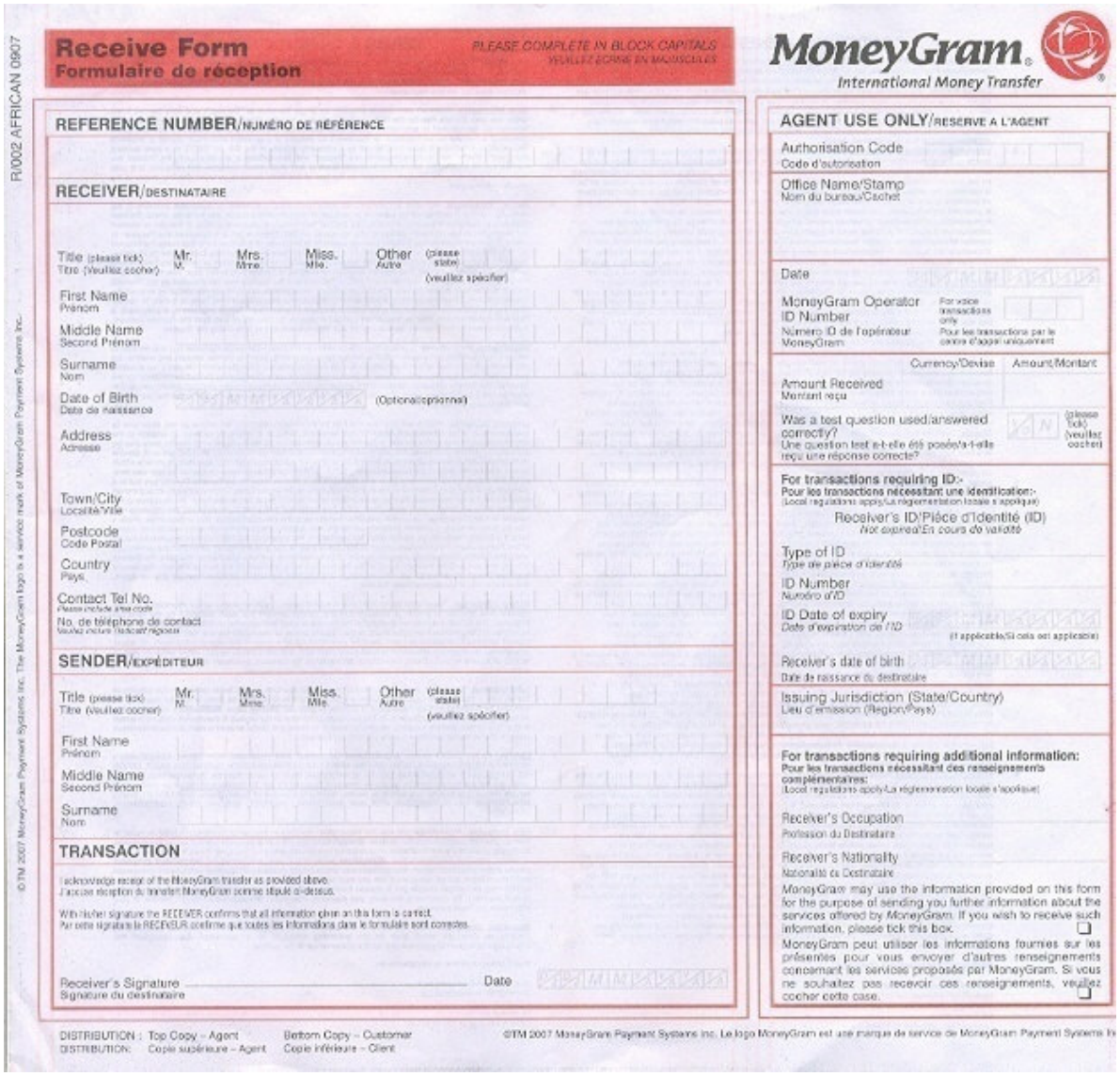
Informed consent – to be read to the participant

I am student pursuing Masters of Science in Informatics at Chancellor College, University of Malawi. My name is Menard Nyirenda. The objective of this research is to investigate on the factors that influence consumers to use mobile payment services provided by Mobile Network Operators. The information provided by a research participant will be anonymous by not disclosing in any way the name of the participant nor providing clues that would lead to suggest a person as a research participant. You have the right not to answer any question that you do not want to respond to. And you have the right to quit the research interview at any point. The interview will take utmost half an hour. Do you mind if the interview is to be recorded to enable the researcher reflect on what you say in this interview?

Questions

1. Tell me about yourself? occupation, area of residence, highest education qualification, age
2. How do you pay for goods and services for daily living?
3. How do you send or receive money from friends and relatives?
4. How did you know about Zap?
5. What prompted you to register for Zap?
6. Tell me what you know about Zap?
7. Share me the experiences you have had in using Zap?
8. How do you compare Zap with other means of paying for goods and services?
9. How do you compare Zap with other ways of sending and receiving money?
10. Where in Blantyre can you transact using Zap?
11. Do you intend to use Zap in near the future? Why?
12. Any concluding remarks about Zap?
13. Who else is registered for Zap?
14. How do you get to know what is happening around?
15. How do you handle finances?
16. How can you describe your personality?

APPENDIX B: MONEYGRAM FORM FOR RECEIVING MONEY



R1002 AFRICAN 0907

Receive Form
Formulaire de réception

PLEASE COMPLETE IN BLOCK CAPITALS
VEUILLEZ ECRIRE EN MAJUSCULES

MoneyGram®
International Money Transfer

REFERENCE NUMBER/NUMÉRO DE RÉFÉRENCE

RECEIVER/DESTINATAIRE

Title (please tick) / Titre (Veuillez cocher): Mr. M. | Mrs. Mme. | Miss. Mlle. | Other Autre (please state) (veuillez spécifier)

First Name / Prénom

Middle Name / Second Prénom

Surname / Nom

Date of Birth / Date de naissance (Optional/optionnel)

Address / Adresse

Town/City / Localité/Ville

Postcode / Code Postal

Country / Pays

Contact Tel No. / No. de téléphone de contact

SENDER/EXPÉDITEUR

Title (please tick) / Titre (Veuillez cocher): Mr. M. | Mrs. Mme. | Miss. Mlle | Other Autre (please state) (veuillez spécifier)

First Name / Prénom

Middle Name / Second Prénom

Surname / Nom

TRANSACTION

I acknowledge receipt of the MoneyGram transfer as provided above.
J'accuse réception du transfert MoneyGram comme stipulé ci-dessus.

With his/her signature the RECEIVER confirms that all information given on this form is correct.
Par cette signature le RECEVEUR confirme que toutes les informations dans le formulaire sont correctes.

Receiver's Signature / Signature du destinataire _____ Date

AGENT USE ONLY/RESERVE A L'AGENT

Authorisation Code / Code d'autorisation

Office Name/Stamp / Nom du bureau/Cachet

Date

MoneyGram Operator ID Number / Numéro ID de l'opérateur MoneyGram (For voice transactions only / Pour les transactions par le centre d'appel uniquement)

Currency/Devise | Amount/Montant

Amount Received / Montant reçu

Was a test question used/answered correctly? / Une question test a-t-elle été posée/a-t-elle reçu une réponse correcte? Y N (please tick) (veuillez cocher)

For transactions requiring ID:-
Pour les transactions nécessitant une identification:-
(Local regulations apply/La réglementation locale s'applique)

Receiver's ID/Pièce d'Identité (ID)
Not expired/En cours de validité

Type of ID / *Type de pièce d'identité*

ID Number / *Numéro d'ID*

ID Date of expiry / *Date d'expiration de l'ID* (If applicable/Si cela est applicable)

Receiver's date of birth / Date de naissance du destinataire

Issuing Jurisdiction (State/Country) / Lieu d'émission (Region/Pays)

For transactions requiring additional information:
Pour les transactions nécessitant des renseignements complémentaires:
(Local regulations apply/La réglementation locale s'applique)

Receiver's Occupation / Profession du Destinataire

Receiver's Nationality / Nationalité du Destinataire

MoneyGram may use the information provided on this form for the purpose of sending you further information about the services offered by MoneyGram. If you wish to receive such information, please tick this box. ☐

MoneyGram peut utiliser les informations fournies sur les présentes pour vous envoyer d'autres renseignements concernant les services proposés par MoneyGram. Si vous ne souhaitez pas recevoir ces renseignements, veuillez cocher cette case. ☐

DISTRIBUTION : Top Copy – Agent Bottom Copy – Customer
DISTRIBUTION: Copie supérieure – Agent Copie inférieure – Client

APPENDIX C: PROFILES OF RESPONDENTS

ID	Gender	Age	Occupation	Education and Professional Qualifications	Place of Residence
1	Male	28	Telecommunication Technician	MSCE*, Diploma in IT* and Telecommunications	Ndirande
2	Male	22	College Student	MSCE pursuing Bachelors degree in IT	Zingwangwa
3	Male	20	Unemployed	MSCE	Machinjiri
4	Female	22	College Student	MSCE pursuing Bachelors degree in IT	Mandala
5	Male	29	Telecommunication Engineer	Bachelors Degree in Engineering	Zingwangwa
6	Male	38	Self-employed Sign-Writer	MSCE	Chilobwe
7	Male	20	College Student	MSCE pursing advanced Diploma in IT	Chichiri
8	Male	23	Secondary School teacher	Bachelors degree in Agriculture	Machinjiri
9	Male	29	Photographer	MSCE, Diploma in IT	Chilobwe
10	Male	30	Engineering Contrator	MSCE, Diploma in Electrical Enginnering	Chilobwe
11	Male	28	University Student Agent	MSCE, Diploma in accounting	Manja
12	Male	27	Service Clerk	Diploma in marketing	Namiyango
13	Female	25	Marketing Executive	Bachelors Degree in Agriculture	Mandala
14	Female	23	Unemployed	MSCE, Diploma in IT	Chilomoni

MSCE* – Malawi School Certificate of Education, IT* – Information Technology

APPENDIX D: CHARGES FOR USING ZAP

Mitengo ya Zap

Tumizani ndalama zosachepera	50
Malire a ndalama potumiza	60,000
Ndalama zisaposere mu foni	300,000

Mitengo yovomerezeka kulipira potumiza kapena kulandira ndalama

ZOCHITA	MTENGO (MK)
Zap kupita ku Zap	14
Zap kupita kwa ogulitsa malonda	14
Kuwonjezera mayunitsi ndi Zap	0
Kuwona balance	14
Kusintha nambala ya chinsinsi	14
Kusintha Nickname	14
kudziwa za ku Banki	14
Zotsatila zake	14
Ndalama zotsala ku Banki	7
Ndondomeko ya ndalama ku Banki	7

Mitengo yovomerezeka kulipira potumiza kapena kulandira ndalama

Ndondomeko ya ndalama		Ndalama zoyenera kulipira (MK)	
		Deposit kwa dealer wa Zap	Yolipira kwa Zap dealer polandira
Kuchoka pa	Kufika pa		
100	500	15	25
501	1,000	35	60
1,001	5,000	150	200
5,001	10,000	350	400
10,001	20,000	550	750
20,001	60,000	800	1000

English Translated version

CHARGES FOR ZAP

U$ 1= MK140.00

	MK
Minimum amount to send	50
Maximum amount to send	60,000
Maximum amount in phone	300,000

Recommended charges for money transfer in local currency - MK

SERVICE	CHARGE
Zap to Zap	14
Zap to a Merchant	14
Airtime top-up	0
Checking Balance	14
Changing password	14
Changing nick-name	14
Enquire Bank details	14
Reply from bank	14
Checking Bank balance	7
Bank statement	7

Recommended charges for money transfer in local currency - MK

Money Ranging		CHARGES	
		Deposit to Zap Dealer	Withdraw from Zap Dealer
From	To		
100	500	15	25
501	1,000	35	60
1001	5,000	150	200
5001	10,000	350	400
10,001	20,000	550	750
20,001	60,000	800	1,000

APPENDIX E: PURCHASING AIRTIME USING ZAP

APPENDIX F: MONEY TRANSFER BETWEEN ZAP ACCOUNTS

Step 1

Step 2

Step 3

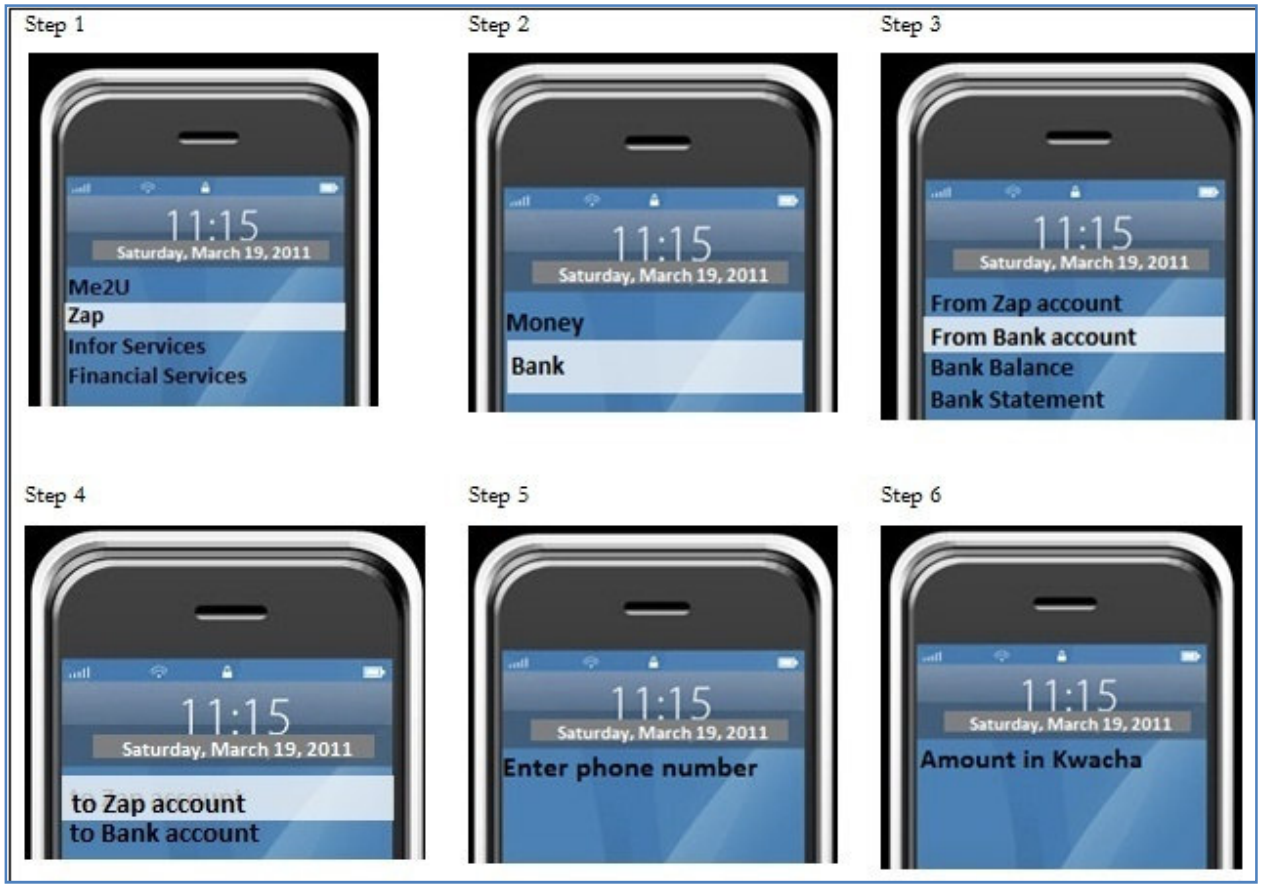
Step 4

Step 5

Step 6

Step 7

APPENDIX G: MONEY TRANSFER FROM A BANK ACCOUNT TO A ZAP ACCOUNT



APPENDIX H: MONEY TRANSFER BETWEEN BANK ACCOUNTS